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FM 101-20

FIELD MANUAL

UNITED STATES ARMY AVIATION PLANNING MANUAL

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FOREWORD

This manual is published in accordance with the provisions of AR 95-70 and contains official U.S. Army aviation factors data in a single-source document to be used as a planning guide ONLY. The factors, when used with other Army program documents (e.g., Army Materiel Plan and Materiel Annex Part II to 5 Year Force Structure), will assist commanders, planners, and programmers in estasblishing a basis for operational, logistical, materiel, personnel, estimates, and the cost requirements for combat readiness of all types and models of Army aircraft. In the event such Army program documents, as mentioned above, indicate later revision, such revisions will take precedence. The data may be used in the preparation of estimates by major commands (theater, field army, or equivalent) but will not be used as a basis of reporting cost or other data.

These planning factors were developed from diversified operational and logistical statistical data and were obtained from various Department of the Army staff offices and other Army agencies having primary responsibilities for the specific mission activities or related functions.

This manual is published in looseleaf form to facilitate insertion of revisions, changes, and/or additions. Each set of published planning factors will be revised on an 18-month cycle to ensure current and accurate data, as well as provide additional factors of interest. TSARCOM is responsible for coordinating pertinent planning factors with the appropriate Army staff agency.

Users of this manual are encouraged to submit recommended changes or comments to improve the manual. Comments must be submitted on DA Form 2028, Recommended Changes to Publications and Blank Forms. Reasons should be provided for each comment to ensure understanding and full evaluation. Comments should be forwarded directly to Commander, U.S. Army Troop Support and Aviation Materiel Readiness Command, Directorate for Plans and Systems Analysis, ATTN: DRSTS-B, 4300 Goodfellow Boulevard, St. Louis, MO 63120.

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Abbreviations used in this manual are listed in AR 310-50 (Standard abbreviations) or Military Standard 12C (Non standard abbreviations).

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FIELD MANUAL

NO. 101-20

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D.C., *6 January 1984*

UNITED STATES ARMY

AVIATION PLANNING MANUAL

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*This manual supersedes FM 101-20, 15 August 1981.

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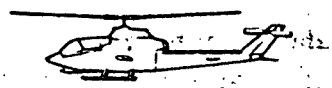
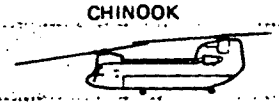
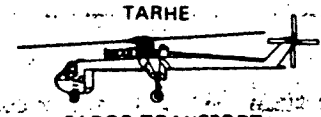
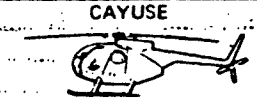
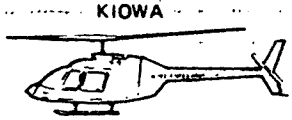
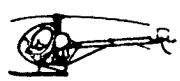
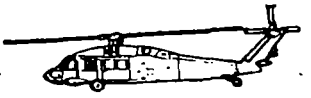
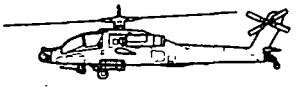
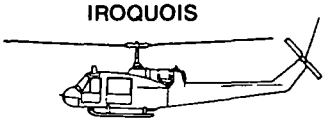
DESIGNATION OF ARMY AIRCRAFT (ROTARY WING)

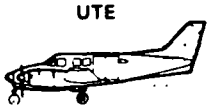
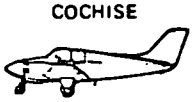
PRE-FERRED	POPULAR NAME AND TYPE	COMBAT ACCEPT SUBST	FOLLOW-ON AIRCRAFT
AH-1G TH-1G	COBRA  ATTACK HELICOPTER	UH-1B UH-1C UH-1M	AH-64A
CH-47A/B/C	CHINOOK  CARGO TRANSPORT HELICOPTER		YCH-47D
CH-54A/B	TARHE  CARGO TRANSPORT HELICOPTER		
OH-6A	CAYUSE 		
OH-58A/C	KIOWA  LIGHT OBSERVATION HELICOPTER		OH-58D
UH-1H UH-1V	IROQUOIS UTILITY HELICOPTER		UH-60A LHX
TH-55A	OSAGE  TRAINER HELICOPTER		OFF-THE-SHELF

AV 010094

DESIGNATION OF ARMY ARICRAFT (ROTARY WING) CONT'D.

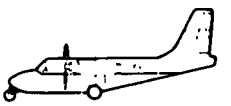
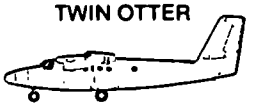
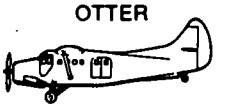
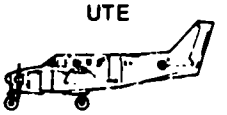
PRE-FERRED	POPULAR NAME AND TYPE	COMBAT ACCEPT - SUBST	FOLLOW-ON AIRCRAFT
UH-60A	BLACK HAWK  UTILITY HELICOPTER	UH-1H	
AH-64A	**APACHE**  ATTACK HELICOPTER		
UH-1C/M	IROQUOIS UTILITY HELICOPTER		**UH-60A**
AH-1S	COBRA ATTACK HELICOPTER	UH-1B UH-1C UH-1M	**AH-64A**
EH-1	IROQUOIS  **SPECIAL MISSION HELICOPTER**		**EH-60A**

DESIGNATION OF ARMY AIRCRAFT (FIXED WING) (Cont.)

PRE-FERRED	POPULAR NAME AND TYPE	COMBAT ACCEPT SUBST	FOLLOW-ON AIRCRAFT
U-8F	SEMINOLE UTILITY AIRPLANE		
U-10A	COURIER UTILITY AIRPLANE		
U-21A/G RU-21A D/H	UTE  UTILITY AIRPLANE		
OV-1B/C/D RV-1D	MOHAWK OBSERVATION/SURVEILLANCE AIRPLANE		
T-41B	MESCALERO TRAINER AIRPLANE		OFF-THE-SHELF
T-42A	COCHISE  TRAINER AIRPLANE		OFF-THE-SHELF

AV 010095

DESIGNATION OF ARMY AIRCRAFT (FIXED WING) CONT'D.

PRE-FERRED	POPULAR NAME AND TYPE	COMBAT ACCEPT SUBST	FOLLOW-ON AIRCRAFT
U-9C	AERO COMMANDER  UTILITY AIRCRAFT		U-21A
C-12A/C RU-21J	HURON UTE CARGO AIRCRAFT		C-12D
UV-18A	TWIN OTTER  UTILITY STOL AIRCRAFT		
U-1A	OTTER  UTILITY AIRCRAFT		U-21A
U-21F RU-21B, C	UTE  UTILITY AIRCRAFT		

Source: TSARCOM-DRSTS-MT

Army Aircraft Type Classification/Reclassification (TC/R) Schedule (Rotary Wing)

Type, Model Series (TMS)	Current Type TCC-LCC	Proposed TCC-LCC	FY-QTR of Actual/ Proposed TCC-LCC	Replacement System
Rotary Wing				
AH-1G (TH-1G)	S-A	C-S	88-1	AH-1S
AH-1S	S-A		77-1	AH-64A
AH-64A	S-A	-	82-1	
CH-47A	S-B	C-S	81-3	CH-47D
CH-47B	S-B	C-S	83-1	CH-47D
CH-47C	S-A	C-S	84-3	CH-47D
CH-47D	S-A		80-4	
CH-54A	S-B	C-S	88-4	
CH-54B	S-B	C-S	90-4	
EH-1H	L-(U)	S-B	79-3	
EH-1X	S-A	-	78-1	
EH-60A	S-A	-	79-2	
OH-6A	S-A	C-S	86-4	
OH-58A	S-A	C-S	86-4	OH-58C
OH-58C	S-A		81-4	OH-58D
OH-58D	D	S-A	85-3	
TH-1G	S-A		72-1	
TH-55A	S-A	C-S	84-4	UH-60A
UH-1B	S-B	C-S	80-4	UH-60A
UH-1C	S-B		69-3	
UH-1H	S-A	C-S	82-4	UH-60A
UH-1M	S-B	C-S	83-4	UH-60A
UH-1V	S-A		78-2	
UH-60A	S-A		77-2	

Army Aircraft Type Classification/Reclassification (TC/R) Schedule (Fixed Wing)

Type, Model Series (TMS)	Current TCC-LCC	Proposed TCC-LCC	FY-QTR of Actual/ Proposed TCC-LCC	Replacement System
Fixed Wing				
C-12A	S-A		76-4	
C-12C	S-A		81-4	
C-12D	S-A		81-4	
OV-1B	S-B	C-S	81-4	OV-1D
OV-1C	S-A	C-S	81-4	OV-1D
OV-1D	S-A	C-S	90-4	
RC-12D	D			
RU-21A	S-B		77-1	
RU-21B	S-B		77-1	
RU-21C	S-B		77-1	
RU-21D	S-B	O-O	80-4	
RU-21H	S-A		81-1	
RU-21J	D			
RV-1D	S-A		78-4	
T-41B	S-B	C-S	86-2	
T-42A	S-A	C-S	85-1	
U-1A	C-F	O-O	78-4	U-21A
U-3A/B	EXEMPT		73-2	
U8F	SB	O-O	80-4	
U-9C	C-S	O-O	78-4	U-21A
U-10A	S-B	C-S	83-4	
U-21A	S-A	C-S	88-3	
U-21F	S-A	C-S	92-1	
U-21G	S-A	C-S	91-4	
UV-18A	S-A		77-1	

Source: AVRADCOM-DRDAV-ERT

LEGEND:

TCC - Type Classification Code

C - Contingency

E - Exempt

L - Limited Procurement

N - Non-Type Classified

O - Obsolete

S - Standard

LCC - Logistic Control Code

A - Items/Systems acceptable for the intended mission

B - Items/Systems acceptable for the intended mission which normally are being replaced through modernization

D - Items/Systems undergoing development which have not qualified for type classification

F - Mission Essential Contingency Items

N - Exempt

O - Obsolete item

S - Contingency items other than Mission Essential Contingency Items that are suitable for training

T - Items classified as Limited Procurement to provide quantities for test

U - All items type classified for Limited Procurement for DA Directed Urgent Operational Requirements

CHAPTER 1

OPERATIONS

Section I AIRCRAFT AUTHORIZATIONS

Aircraft authorizations are listed by TOE unit authorizations. The current Major Item Analysis (Data Sheets) contains details concerning authorizations for specific areas or commands. The Basis of Issue (BOI) authorizations are updated to comply with the ARCSAIII evaluation.

1-1. Basis of Issue — Aircraft Authorization Per Unit.

UNIT		TOE	TOTAL ACFT	LOH	AH-1	UH-1	UH-60	CH-47	CH-54	OV-1	U-21	NOTE
ARMORED DIV	RECAP	17	164	66	51	22	25					
CBT AVN BN	RECAP	17-85	135	56	42	22	15					
ATK HEL CO (2)		17-387	72	24	42	6						
CBT SPT AVN CO		57-57	15				15					
AVN CO		17-87	46	32		14						
TRANS ACFT MAINT CO		55-427	2			2						
ARMD CAV SQDN	RECAP	17-105	26	10	9		7					
AIR CAV TRP		17-108	26	10	9		7					
CEWI BN	RECAP	34-165	3				3					C
HQ/HQ & OP CO		34-166	3				3					C
INFANTRY DIV (MECH)	RECAP	37	164	66	51	22	25					
CBT AVN BN	RECAP	17-85	135	56	42	22	15					
ATK HEL CO (2)		17-387	72	24	42	6						
CBT SPT AVN CO		57-57	15				15					
AVN CO		17-87	46	32		14						
TRANS ACFT MAINT CO		55-427	2			2						
ARMD CAV SQDN	RECAP	17-105	26	10	9		7					
AIR CAV TRP		17-108	26	10	9		7					
CEWI BN	RECAP	34-165	3				3					C
HQ/HQ & OP CO		34-166	3				3					C
INFANTRY DIV	RECAP	7	199	74	48	44	33					
CBT AVN BN	RECAP	57-55	114	44	21	19	30					
CBT SPT AVN CO (2)		57-57	30				30					
AVN GEN SPT CO		57-58	46	32		14						
ATK HEL CO		17-387	36	12	21	3						
TRANS ACFT MAINT CO		55-427	2			2						

1-1. Basis of Issue — Aircraft Authorization Per Unit (Con't).

UNIT		TOE	TOTAL ACFT	LOH	AH-1	UH-1	UH-60	CH-47	CH-54	OV-1	U-21	NOTE
AIR CAV SQDN	RECAP	17-205	82	30	27		25					
CAV SQDN		17-206	4				4					
AIR CAV TRP (3)		17-208	78	30	27		21					
CEWI BN	RECAP	34-165	3				3					C
HQ/HQ & OP CO		34-166	3				3					C
AIRBORNE DIVISION	RECAP	57	196	74	48	19	55					
CBT AVN BN	RECAP	57-55	114	44	21	19						
CBT SPT AVN CO (2)		57-57	30				30					
AVN GEN SPT CO		57-58	46	32		14						
ATK HEL CO		17-387	36	12	21	3						
TRANS ACFT MAINT CO		55-427	2			2						
AIR CAV SQDN	RECAP	17-275	82	30	27		25					
HHT AIR CAV SQDN		17-276	4				4					
AIR CAV TRP (3)		17-278	78	30	27		21					
HEAVY DIVISION	RECAP	87	122	54	50	6	12					F
CAVALRY BDE AIR ATK	RECAP	17-201	122	54	50	6	12					
CBT SPT AVN BN	RECAP	1-285	27	16		6	5					
GEN SPT AVN CO		1-287	25	16		6	3					C
TRANS ACFT MAINT CO		55-427	2				2					
CAV SQDN	RECAP	17-205	21	12	8		1					
HQ & HQ TROOP		17-206	1				1					
AIR CAV TROOP (2)		17-208	20	12	8							
ATK HEL BN (2)	RECAP	17-185	74	26	42		6					
HQ & SVC CO (2)		17-186	8	2			6					
ATK HEL CO (6)		17-187	66	24	42							

1-1. Basis of Issue — Aircraft Authorization Per Unit (Con't).

UNIT		TOE	TOTAL ACFT	LOH	AH-1	UH-1	UH-60	CH-47	CH-54	OV-1	U-21	NOTE
HEAVY DIVISION	RECAP	87	160	54	50	29	27					E
ATK HEL BN (2)	RECAP	17-185	74	26	42		6					
HQ & SVC CO (2)		17-186	8	2			6					
ATK HEL CO (6)		17-187	66	24	42							
CAV SQDN, CBAA	RECAP	17-205	21	12	8		1					
HQ & HQ TROOP		17-206	1				1					
AIR CAV TROOP (2)		17-208	20	12	8							
CBT SPT AVN BN	RECAP	1-285	27	16		6	5					
GEN SPT AVN CO		1-287	25	16		6	3					C
TRANS ACFT MAINT CO		55-427	2				2					
CBT SPT AVN CO (UH-60)		7-257	15				15					
CBT SPT AVN CO (UH-1)		7-257	23			23						
AIR ASSAULT DIVISION	RECAP	67	460	124	111	47	130	48				
AVIATION GROUP	RECAP	7-200		58	84	28	90	48				
GS AVIATION CO		7-202	20	10		10						
COMBAT SPT AVN BN (2)	RECAP	7-255	90				90					
COMBAT SPT AVN CO (6)		7-269	90				90					
ATK HEL BN	RECAP	17-285	148	48	84	16						
HHC ATK HEL BN		17-286	4			4						
ATK HEL CO (4)		17-287	144	48	84	12						
TRANS MED HEL BN	RECAP	55-165	50			2		48				
TRANS MED HEL CO (2)		55-167	50			2		48				
AIR CAV SQDN	RECAP	17-95	82	30	27		25					
HHT AIR CAV SQDN		17-96	4				4					
AIR CAV TRP (3)		17-98	78	30	27		21					
HHC, AMBL DIV BDE (3)		67-42	30	18		12						
SPT COMMAND	RECAP	29-41	16			4	12					
MED BN	RECAP	8-25	12				12					

1-1. Basis of Issue — Aircraft Authorization Per Unit (Con't).

UNIT		TOE	TOTAL ACFT	LOH	AH-1	UH-1	UH-60	CH-47	CH-54	OV-1	U-21	NOTE
MED CO AIR AMB		8-28	12				12					
TRANS ACFT MAINT BN	RECAP	55-405	4			4						
TRANS ACFT MAINT CO (2)		55-407	4			4						
AMBL DIV ARTY		6-700	21	18		3						
AVN/TGT QCQ BTRY		6-797	21	18		3						
CEWI BN	RECAP	34-275	3				3					C
HQ/HQ & DP CO, CEWI BN		34-276	3				3					C
AIR CAV CBT BDE	RECAP	17-200	334	106	153	26	25	24				
HQ & HQ TROOP, ACCB		17-202	9	4		5						
ATTACK HELICOPTER BN (2)	RECAP	17-385	224	72	126	26						
HHC, ATK HEL BN (2)		17-386	8			8						
ATTACK HELICOPTER CO (6)		17-387	216	72	126	18						
AIR CAVALRY SQDN	RECAP	17-205	82	30	27		25					
HHT, AIR CAV SQDN		17-206	4				4					
AIR CAVALRY TROOP (3)		17-208	78	30	27		21					
SUPPORT BATTALION	RECAP	29-155	27			3		24				
TRANS ACFT MAINT CO		55-417	2			2						
MEDIUM HELICOPTER CO		55-167	25			1		24				
(MEDICAL CO, ACCB)		8-157	(4)				(4)					D

1-1. Basis of Issue — Aircraft Authorization Per Unit (Con't).

UNIT	TOE	TOTAL ACFT	LOH	AH-1	UH-1	UH-60	CH-47	CH-54	OV-1	U-21	NOTE
CMD AIRPLANE CO	1-117	21								21	
CORPS AVN CO	1-127	39	20		17					2	
AVN CO	1-137	51	15		14					12	
HHD AIR TRAFFIC CONTROL GP	1-222	2								2	
HHD AIR TRAFFIC CONTROL BN	1-226	3			3						
AVIATION SUPPORT CO	1-277	16			16						
AVIATION TEAMS	1-500	8							2	1	
HHC, ENGR GP	5-52	7	3		4						
ASSAULT HEL CO	7-258	20				15					
CBT SPT AVN CO	7-357	23			23						
MED-AIR AMB CO	8-137	25				25					
HEL AMB TM R & A	8-660	6				6					
HHC, SIGNAL BN	11-226	3			3						
HHC CORPS CMD OPNS BN	11-406	15	7		5					3	
HHC, CORPS SIGNAL BDE	11-412	15	7		5					3	
COMBAT SPT TROOP	17-59	29	16		13						
HHC ATK HEL BN	17-386	4			4						
ATK HEL CO	17-387	24		21	3						
HHC MP GROUP	19-272	5	5								
INF ORG	20-500	1								1	

1-1. Basis of Issue — Aircraft Authorization Per Unit (Con't).

UNIT	TOE	TOTAL ACFT	LOH	AH-1	UH-1	UH-60	CH-47	CH-54	OV-1	U-21	NOTE
MIL INTELLIGENCE CO AERIAL SURVEILLANCE	30-088	18							18		A
SVC CO ABN SF GP	31-127	4				4					
ASA AVN CO	32-093	9								9	B
HQ/HQ & OP CO	32-166	3				3					C
TRANS MED HEL CO	55-167	25			1		24				
HVY HEL CO	55-259	10			1			9			
TRANS ACFT MAINT CO	55-459	2			2						
HHC, TRANS ACFT DEP MAINT BN	55-466	2			2						
DIVISION (TNG) TM II	97-500		(2)								D
DIVISION (TNG) TM IJ	97-500		(2)								D

NOTES:

A/ 12 EA OV-1B & 6 EA OV-1C

B/ 4 EA RU-21A, 3 EA RU-21B & 2 EA RU-21C

C/ EH-60 ACFT

D/ AUGMENTATION

E/ ACFT STRENGTH AUGMENTED, REPLACES ARMD/MECH DIV

F/ REPLACES ARMD/MECH DIV

Source: TSARCOM-DRSTS-SPME

1-2. Test and Test Support Aircraft.

Requirements for test and test support aircraft are established as follows:

a. All plans of test or research/development programs which require the use of aircraft for any phase will identify the specific type of aircraft required and the purpose (e.g., competitive evaluation of navigation aids in utility helicopter, air transportability of missile in cargo helicopter).

b. The agency providing test service to customers normally requires one aircraft to support two plans of test, with the following exceptions:

(1) An aircraft which is on bailment for an extended period cannot be considered as an available asset to fill additional requirements.

(2) An aircraft which has been modified to a special configuration (flying lab, armament test bed) in support of a particular specialized long range R & D program may not be considered as a suitable available asset to apply against normal test and test support aircraft requirements during a given fiscal year. (However, this aircraft may become available for use in other programs in subsequent years.) Nonstandard aircraft assets shall not be considered as suitable substitutes for Army aircraft when computing test and test support aircraft requirements. Requirements should be based on use of Army-type aircraft to support Army programs. Use of nonstandard aircraft (C-47, T-28) for Army test programs will be authorized only if an Army-type aircraft cannot be made available or is not suitable for the intended purpose.

Example: A USAF jet aircraft may be necessary for missile chase at firing sites.

c. In addition to aircraft originally assigned to support research, development, test, and evaluation, additional aircraft may be allocated, if required, in accordance with revised development/test programs.

1-3. Authorized Aircraft Designations.

a. All Department of Army Aircraft have been assigned designations in accordance with provisions of AR 70-50. Explanation of terms are as follows:

(1) Status prefix symbol. The status symbol (letter), will indicate an aircraft being used for experimentation and special or service test and will be placed at the immediate left of the modified mission symbol, or the mission/type symbol if no modified mission symbol is applicable.

(2) Modified mission symbol. A letter used to indicate the current capability of an aircraft when it is so modified that its original intended capability is no longer applicable, or when it has an added or restricted capability. The modified mission symbol will consist of a prefix letter placed at the immediate left of the basic mission or type symbol. Only one modified mission symbol will be used in any one designation.

(3) Basic mission symbol. A letter used to indicate the basic intended function or capability of the aircraft, such as observation, utility, etc.

(4) Type symbol. An additional letter which designates helicopter and V/STOL aircraft. An aircraft identified by a type symbol, such as "H" for helicopter, will be further identified by only one mission symbol whether it be basic mission or a modified mission symbol. (A basic mission or type symbol, once officially assigned, will not be changed without the approval of the Assistant Secretary of Defense (Installation and Logistics).

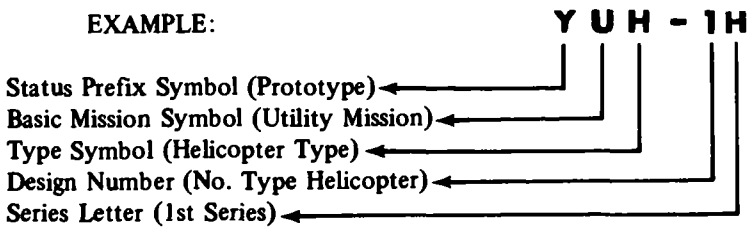
(5) Design number. The sequence number of each new design of the same basic mission or type aircraft. A number will be assigned consecutively for each basic mission or type. New design numbers will be assigned when an existing aircraft is redesigned to an extent that it no longer reflects the original configuration or capability.

(6) Series letter. A letter used to denote differences affecting the relation of the vehicle to its ground environment, and major modifications to the aircraft which result in significant changes to its logistic support. A letter will be assigned to each series change of a specific basic design. In designing new aircraft, the series letter will be in consecutive order

starting with the letter "A." To avoid confusion, the letters "I" and "O" will not be used as series symbols. (Examples of series symbol change would be installation of different engines, propellers, extra fuel tank, etc.)

(7) Complete designation. The complete designation shall consist of items (1) through (6) as applicable, in the order shown. A dash (–) will be inserted between the basic mission/type symbol and the design number.

EXAMPLE:



b. Status prefix symbols (classification letters) are as follows:

LETTER	TITLE	DESCRIPTION
G	Permanently Grounded	An aircraft permanently grounded, used for ground instruction and training.
J	Special Test, Temporary	Aircraft on special test programs by authorized organizations or on bailment contract having a special test configuration or whose installed property has been temporarily removed to accommodate the test. At completion of the test, the vehicle will be returned either to its original configuration or to standard operational configuration.
N	Special Test, Permanent	Aircraft on special test programs by authorized activities or on bailment contract, whose configuration is so drastically changed that return of aircraft to its original configuration or conversion to standard operational configuration is beyond practicable or economical limits.
X	Experimental	Aircraft in a developmental, experimental stage where basic mission symbol and design number have been designated but not established as a standard vehicle.

LETTER	TITLE	DESCRIPTION
Y	Prototype	Aircraft procured in limited quantities to develop the potentialities of the design.
Z	Planning	Designations used for identification purpose during the planning or pre-development stage.

c. Modified missions symbols (prefix letters) are as follows:

LETTER	TITLE	DESCRIPTION
A	Attack	Aircraft modified to search out, attack, and destroy enemy land or sea targets, using conventional or special weapons. Also used for interdiction and close air support mission.
C	Cargo/ Transport	Aircraft modified for carrying cargo and/or passengers.
E	Special Electronic Installation	Aircraft equipped with electronic devices for employment in one or more of the following missions. (1) Electronic countermeasures (2) Airborne early warning radar (3) Airborne command control including communications relay (4) Tactical data communications link for all nonautonomous modes of flight.
Q	Drone	Aircraft modified to be controlled from a point outside the aircraft.
R	Reconnaissance	Aircraft modified and permanently equipped for photographic and/or electronic reconnaissance missions.
T	Trainer	Aircraft modified and equipped for training purposes.
U	Utility	Aircraft having small payload, modified to perform miscellaneous missions such as carrying cargo or passengers, and towing targets.
V	Staff	Aircraft modified to provide accommodations such as chairs, tables, lounge, and berths for the transportation of staff personnel.

d. Basic mission and type symbols are as follows:

LETTER	TITLE	DESCRIPTION
A	Attack	Aircraft designed to search out, attack, and destroy enemy land or sea targets, using conventional or special weapons. Also used for interdiction and close air support missions.

LETTER	TITLE	DESCRIPTION
C	Cargo/ Transport	Aircraft designed for carrying cargo and/or passengers.
H	Helicopter	A rotary-wing aircraft designed with the capability of flight in any plane; e.g., horizontal, vertical, or diagonal.
O	Observation	Aircraft designed to observe (through visual or other means) and report tactical information concerning composition and disposition of enemy forces, troops, and supplies in an active combat area.
R	Reconnaissance	Aircraft designed to perform reconnaissance missions.
T	Trainer	Aircraft designed for training personnel in the operation of aircraft and/or related equipment, and having provisions for instructor personnel.
U	Utility	Aircraft used for miscellaneous missions such as carrying cargo and/or passengers, towing targets, etc. These aircraft include those having a small payload.
V	VTOL and STOL	Aircraft designed for vertical takeoff or landing with no takeoff or landing roll, or aircraft capable of takeoff and landing in a minimum prescribed distance.
X	Research	Aircraft designed for testing configurations of radical nature. These aircraft are not normally intended for use as tactical aircraft.

e. Application for an aircraft designation or cancellation of a previously authorized designation may be accomplished by addressing the request CDR, US Army Aviation Research and Development Command, ATTN: DRDAV-ERT, 4300 Goodfellow Blvd., St. Louis, MO 63120. Application for status prefix symbol. "J" (Special Test, Temporary) will be forwarded to CDR, USATSARCOM, ATTN: DRSTS-X(2), St. Louis, MO 63120, providing complete identification, purpose/justification and length of time required.

f. A complete listing of model designations assigned to military aircraft is contained in DOD 4120.15-L.

Section II. FLYING HOUR PROGRAM

The flying hour program can be calculated by taking the average inventory for the command and multiplying it by the annual flying hour rate for the particular aircraft.

Example:

FORSCOM
OV-1 - Fiscal Year 1979
Average number of aircraft 21
Annual flying hour rate 240
21 X 240 = 5040 hours

Source: DCSOPS–DAMO

1-4. Basic Annual Flying Hour Planning Factors.

a. A Worldwide Flying Hour Program is developed annually by the Department of the Army for use in budget preparation and in planning for logistical support of aircraft. It is used as a basis for management of the entire aircraft inventory and is not applicable to the operation of a single aircraft or to the aircraft of any specific aviation unit or activity.

b. The flying hour program for each major command is published annually in Chapter V, Section 4 of the Department of the Army Program and Budget Guidance Document. This document lists flying hour guidance in bulk flying hours for each type of aircraft assigned to the major commands. Factors considered in development of command flying hour programs include: the projected aircraft inventory, mission requirements of the command, aviator availability, budgetary limitations, logistical considerations and other variables which may affect aircraft utilization within the commands. The DA Flying Hour Program is not expressed in flying hour rates. An additional factor to be considered in development of command flying hour programs is the aviator training requirement of the new aircrew training manuals (TC1-134 series) as prescribed by AR 95-1.

c. The basic flying hour planning factors contained below are suitable for use in intermediate and long range planning at any level of command. Two points of rationale used in the development of these factors should be considered in planning applications; these are:

(1) Aircraft assigned to TOE units are intended to meet combat requirements. In a peacetime situation or noncombat environment, utilization of these aircraft should be restricted to only that flying time necessary to provide adequate training for aviation units and other units which are supported by aviation units.

(2) Indirect support aircraft are assigned to TDA units and must meet specific administrative, training, or RDTE requirements. Utilization of indirect support aircraft, except training and training support aircraft assigned to the aviation training base and RDTE aircraft, must meet or exceed the planning factors shown, to justify retention in the aircraft inventory at every level of command. Utilization of training base aircraft is determined by the student training rate approved or programmed for the year under consideration. Utilization of RDTE aircraft is basically determined by the requirements of the RDTE programs supported.

1-5. Table of Flying Hour Planning Factors 1/.

TYPE AIRCRAFT	TOE PEACETIME (WORLDWIDE) ENVIRONMENT		TOE ACTIVE COMBAT ENVIRONMENT		INDIRECT SUPPORT AIRCRAFT (WORLDWIDE) ALL ENVIRONMENT 2/	
	AVG MON	AVG YR	AVG MON	AVG YR	AVG MON	AVG YR
U-21 A, F, G	35	420	74	888	35	420
OV-1 B, C, D/RV-1D	20	240	58	696	25	300
	—	—	—	—	—	—
OH-6 A	20	240	68	816	25	300
OH-58A,C	20	240	68	816	25	300
UH-1 B/M	20	240	55	660	25	300
UH-1 H	25	300	79	948	25	300
AH-1 G, S,	20	240	65	780	25	300
CH-47 A, B, C	20	240	58	696	25	300
CH-54 A, B	15	180	43	516	25	300
C12	50	600	74	888	50	600
U-8 F	35	420	74	888	35	420
RU-21 A,B,C,D, H,J	35	420	74	888	35	420
EH-1H/EH-1X/EH-60	25	300	79	948	25	300
UH-60A	25	300	76	912	35	420

1/ All factors include operational readiness float aircraft.

2/ Does not include training and training support aircraft assigned to the training base, RDTE (test and test support) aircraft, or aircraft type classified contingency.

Source: DCSOPS-DAMO-RQD

Section III. REPLACEMENT/CRASH DAMAGE FACTORS (ATTRITION)

The following Peacetime Replacement Factors and Crash Damage Factors were used in the Distribution Schedules (Form 881) developed during the 1982 Worldwide Aviation Logistics Conference.

The mathematical model, which was developed by the Directorate for Plans and Systems Analysis, TSARCOM, was approved by DA DCSLOG prior to its application.

The method of computation is based on programmed flying hours, assuming all will be flown. The method of applying the Factors is:

(1) Convert the Flying Hour program to its decimal portion of 100,000 and

(2) Multiply this figure by the factor, then

(3) Round the result up to the next whole number.

EXAMPLES:

a. Flying Hour program of 22,730 hours for the AH-1 multiplied by the Peacetime Replacement Factor of 3.5 will yield--

.22730 x 3.5 = .79555 = 1

b. Flying Hour program of 298,000 hours for the UH-1H multiplied by the Crash Damage Factor of 1.82 will yield--

2.98 x 1.82 = 5.4236 = 6

1-6. Monthly Crash Damage (CD) and Peacetime Replacement Factors (PTRF)

AIRCRAFT TYPE/MODEL	PEACETIME REPLACEMENT FACTOR	CRASH DAMAGE FACTOR
Rotary Wing		
AH-1	3.5	2.04
CH-47	5.1	9.35
EH-1H	2.2	1.96
OH-6	3.7	.5
OH-58	3.2	1.0
TH-1G	3.5	4.07
TH-55A	3.2	1.71
UH-1	2.18	.98
UH-1H	1.7	1.82
UH-60	.67	N/A
Fixed Wing		
C-12	1.8	3.66
OV-1	6.5	N/A
T-41B	1.2	1.25
T-42A	4.0	3.79
U-8/9	4.2	6.42
U-21	1.8	1.83

No factors for other aircraft.

Source: DRSTS-BAR

Section IV STANDARD AIRCRAFT CHARACTERISTICS/PERFORMANCE

Standard aircraft characteristic data contained herein will change as modifications or additions and deletions of aircraft components or equipment are made.

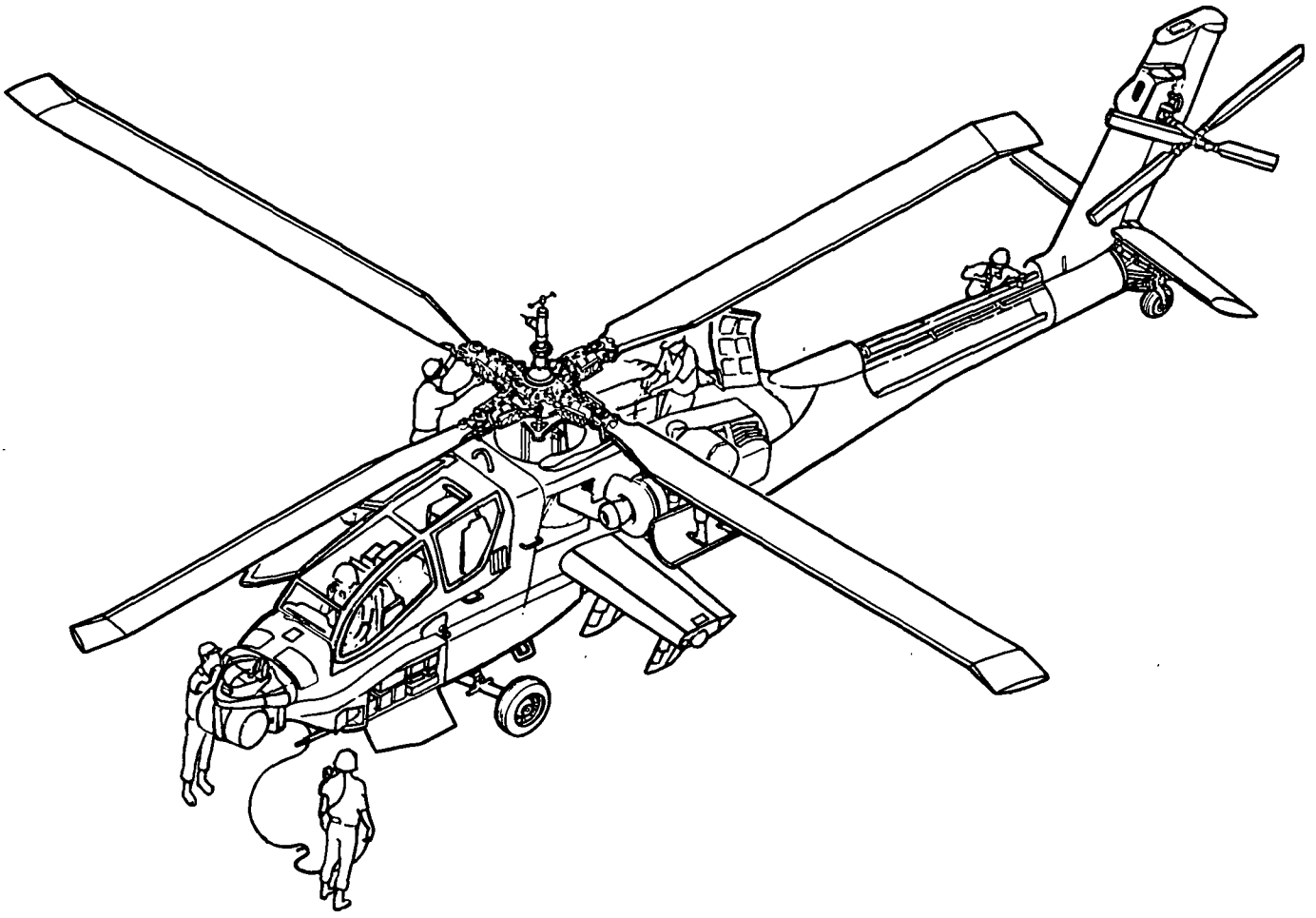


Figure 1-1. AH-64A (Apache)

DIMENSIONS

Rotor dia	48 Ft.
Length:	
Rotors operating	58.25 Ft.
Fuselage	49.12 Ft.
Span (max lateral)	17.17 Ft.
Height	15.20 Ft.
Tread	6.66 Ft.
Rotor gnd clearance (static)	10.00 Ft.

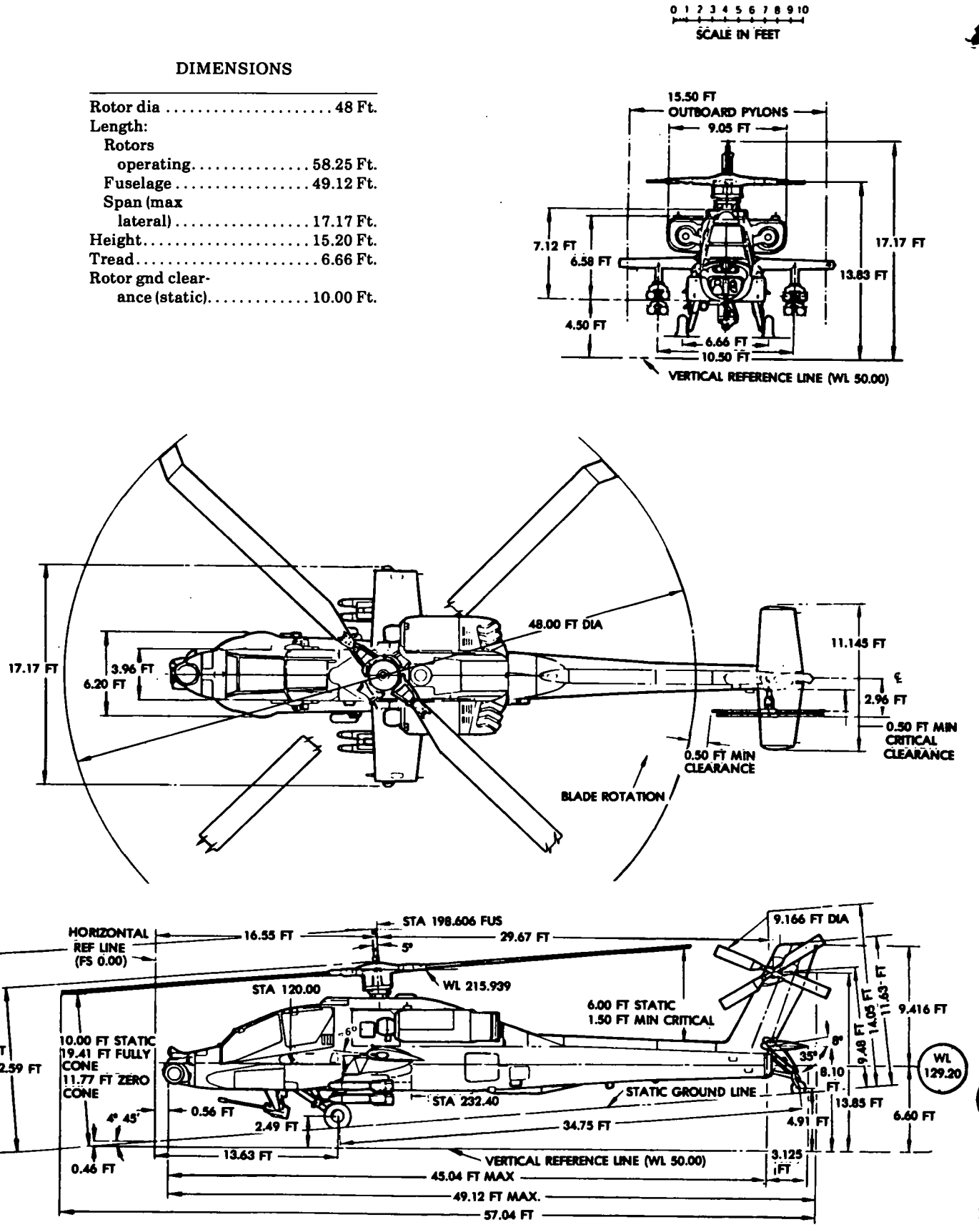


Figure 1-2. Principal Dimensions, AH-64A (Apache)

1-7. AH-64A Characteristics

ENGINE

No. and Model ..... (2)T700-GE-701
Mfr ..... General Electric
Engine Spec. No DARCOM-CP-2222-02-701
Type ..... Free Power Turbine
Reduction Gear Ratio 72.42:1
Tail Pipe ..... Fixed Area
Augmentation ..... None

ENGINE RATINGS

Intermediate	1694	SL/STD
Max Continuous	1510	SL/STD
Contingency	1723	SL/STD

TECHNICAL PUBLICATIONS

AIRFRAME: (Draft)
TM 55-1520-238-10 & CL
TM 55-1520-238-23
TM 55-1520-238-23P
TM 55-1520-238-PM
TM 55-1520-238- MTF
TM 55-1520-238- PMD
TM 55-1520-238-S
TM 55-1520-238-(T)
ENGINE: (Draft)
TM 55-2840-248-23
WEAPONS:
TM 9-1090-208-23 AREA WPN & RKT SYS
TM 9-1427-475-23 HF MSL EQUIP
TM 9-476-23 FIRE CONTROL SYS
OPTICAL:
TM 9-1270-221-234P INT HELMET & DISPLAY SIGHT SYS
TM 9-1425-476- 23&P TADS
TM 11-5855-265- 23&P PNVS

MISSION AND DESCRIPTION

AH-64A

The AH-64A is being developed primarily for destruction of armored vehicles, but is capable of defeating a wide range of other targets. It will provide direct aerial fires as an integral element of the ground units and will be responsive around the clock and under adverse weather conditions. It will contribute highly mobile, effective and accurate anti-armor firepower with the hellfire laser guided anti-armor missile, 30mm chain gun and 2.75 inch rockets. The AH-64A is equipped with an integrated Target Acquisition and Designation Sight (TADS) and a Pilot's Night Vision Sensor (PNVS). The aircraft is designed to survive against current and future enemy threats on the battlefield.

DEVELOPMENT

Date of contract ..... Jun 1973
First flight (similar aircraft) ..... Mar 1975
First acft delivered (Production) ..... Feb 1984

FEATURES

Not Available

PERSONNEL

Pilot 1
Co-Pilot/Gunner 1

WEIGHTS

LOADING	LB.
Empty	11,015
Basic	14,660
Design	14,694
Combat (Primary)	14,694
(Max Alt)	17,650
(Ferry)	20,533

FUEL AND OIL

Fuel:
Grade JP-4/5/8
Spec MIL-T-5624J MIL-T-83133
No tanks ..... 4(External)
Location ..... Wings
Qty ..... 812 Gal
Oil:
Spec MIL-L-7808G/ MIL-L-23699B
No. tanks 2
Location ..... Integral w/ Engine
Qty ..... 3.65 Gal

AVIONICS/ARMAMENT

Refer to Chapter 2.

FLYAWAY COSTS/NSN

NSN 1520-01-106-9519
Lin Z33149
Costs — Not Available

1-8. Loading and Performance — Typical Mission AH-64A

Conditions		Primary Mission	Mission I	Mission II	Mission III	Mission IV	Ferry Mission
Mission Gross Weight (Take Off)	(lbs)	14694	15084	16242	16242	16242	20533
Payload (Expendable Ordnance)	(lbs/no)						
HELLFIRE	(lbs/no)	788/7	788/8	1576/16	788/8		
2.75'' Rockets	(lbs/no)				1030/38	2060/76	
30MM	(lbs/no)	247/320	616/800	618/802	474/616	331/429	
Fuel (Usable)	(lbs)	1624	1644	1624	1624	1624	77093
Vertical Rate of Climb OGE @ 4000 ft, 95°F, 95% IRP	(FPM)	800	440	0	0	0	
Rate of Climb @ 80 kts, 4000 ft, 95°F, IRP	(FPM)	2510	2375	1942	1942	1942	
Cruise Speed @ 4000 ft, 95°F, MCP	(KTAS)	145	144	138	139	140	
Endurance @ 4000 ft, 95°F	(Hrs)	1.83	1.83	1.69	1.70	1.71	
Hover Ceiling OGE 95°F, 95% IRP	(Ft)	5600	5300	3100	3100	3100	0
Hover Ceiling IGE 95°F, 95% IRP	(Ft)	10900	10200	8500	8500	6500	
Service Ceiling Standard Day, IRP	(Ft)	20000	20000	20000	20000	20000	
Service Ceiling Single Engine, Standard Day, IRP	(Ft)	10100	9200	7000	7000	7000	
Service Ceiling Single Engine, 95°F, IRP	(Ft)	5600	4600	2850	2850	2850	
Ferry Range	(NM)						800

Conditions		Primary Mission Payload w/Full Fuel	Alternate Mission IA	Alternate Mission IIA	Alternate Mission IIIA	Alternate Mission IVA	Alternate Mission VA
Mission Gross Weight (Take Off)	(lbs)	15512	15882	17060	17060	17060	17650
Payload (Expendable Ordnance)		Same as above	Same as above	Same as above	Same as above	Same as above	
Hellfire	(lbs/no)	↓	↓	↓	↓	↓	0
2.75'' Rockets	(lbs/no)						2060/76
30MM	(lbs/no)						824/1200
Fuel	(lbs)	2442	2442	2442	2442	2442	2442
Endurance @ Sea Level, Std. Day	(hrs)	2.59	2.57	2.50	2.51	2.52	2.49

1/ Engine Operating Limit — 8000 ft, 95°F
2/ With External Fuel Tanks
3/ With 20 Knot Headwind
4/ At the Above Mission Gross Weights

1-9. Performance Notes — AH-64A.

Formula: Primary Mission — Entire mission performed at 4000 ft, 95°F as follows:

1. 8 minutes at maximum continuous power.
2. 30 minutes at 0-40 KTAS @ PMGW *.
3. 12 minutes at 80-100 KTAS @ PMGW *.
4. 5 minutes at 150 KTAS or at speed limited by IRP @ PMGW.
5. 25 minutes HOGE @ PMGW *.
6. 30 minutes reserve at maximum range speed @ PMGW minus expendable ordnance minus fuel burned off in 1 through 5.

*Compute 1/2 at PMGW (primary mission gross weight) and 1/2 at PMGW less 1/2 the expendable ordnance payload and less fuel for items 1 through 5.

Formula: Alternate Mission I — Same as Primary Mission.

Formula: Alternate Mission II — Same as Primary Mission, except time at 800-100 KTAS at 3.6 minutes.

Formula: Alternate Mission III — Same as Primary Mission, except time at 80-100 KTAS is 4.0 minutes.

Formula: Alternate Mission IV — Same as Primary Mission, except time at 80-100 KTAS is 4.4 minutes.

Formula: Ferry Mission — Auxiliary fuel tanks utilized. Twenty knot headwind. A 45 minute fuel reserve at max range speed shall be provided for flights up to 3 hrs in length. For flights over 3 hrs, reserve shall be increased by 10% of the additional fuel at the airspeed and headwind required above. Two minutes at MCP shall be allowed for warm-up and take-off. The mission shall be performed at standard day conditions with takeoff at sea level.

Formula: Mission with Primary Mission Payload and Full Fuel.Entire mission performed at sea level standard day conditions as follows:

1. 8 minutes at maximum continuous power.
2. 25 minutes HOGE @ TOGW *.
3. 30 minutes at 0-40 KTAS @ TOGW *.
4. 20.1 minutes @ 150 KTAS @ TOGW *.
5. 30 minutes at maximum endurance airspeed @ TOGW *.
6. 12 minutes at 80-100 KTAS @ TOGW *.
7. 30 minutes reserve at maximum range airspeed @ TOGW * minus expendable ordnance minus fuel burned off in 1 through 6.

*Compute 1/2 at TOGW (Takeoff gross weight) and 1/2 at TOGW less 1/2 the expendable ordnance payload and less fuel for items 1 through 6.

Formula: Alternate Mission IA — Same as Mission at Basic Structural Design Gross Weight, except time at 150 KTAS is 19.2 minutes.

Formula: Alternate Mission IIA — Same as Mission at Basic Structural Design Gross Weight, except time at 150 KTAS is 15.2 minutes.

1-9. Performance Notes — AH-64A(Con't)

Formula: Alternate Mission IIIA — Same as Mission at Basic Structural Design Gross Weight, except time at 150 KTAS is 15.5 minutes.

Formula: Alternate Mission IVA — Same as Mission at Basic Structural Design Gross Weight, except time at 150 KTAS is 16.0 minutes.

Formula: Alternate Mission VA — Same as Mission at Basic Structural Design Gross Weight, except time at 150 KTAS is 14.1 minutes.

Performance Reference: System Specification DRC-S-410000B AH-64A

Source: AVRADCOM DRCPM-AAH-SE

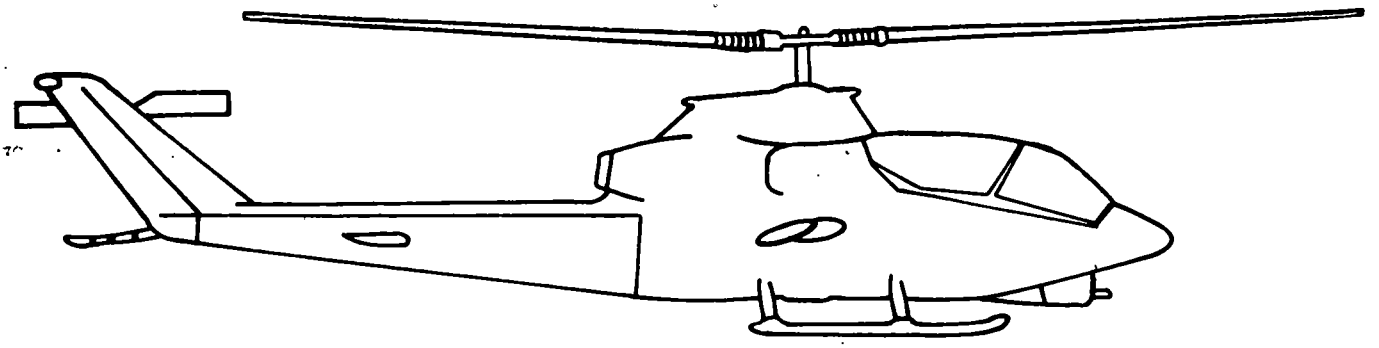


Figure 1-3. AH-1G and TH-1G

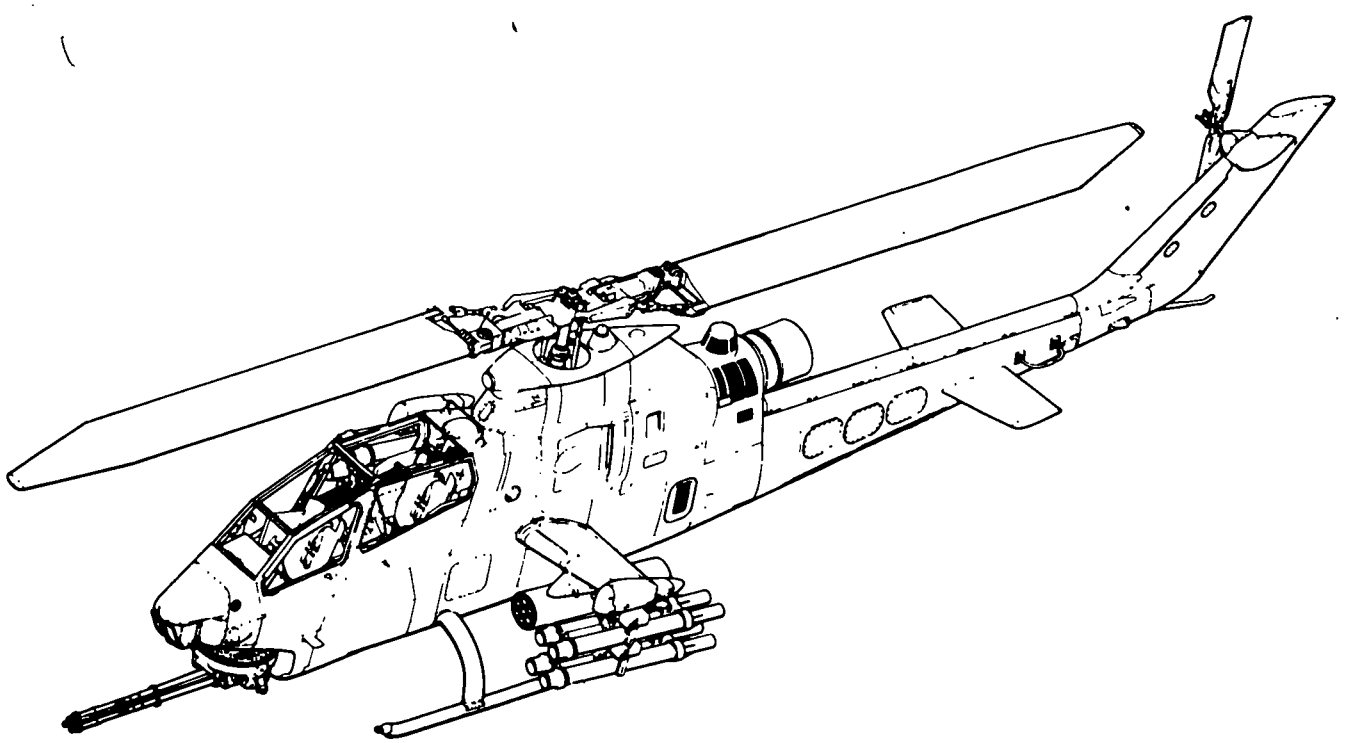


Figure 1-3.1. AH-1S (ECAS)

DIMENSIONS

Rotor dia	44 Ft.
Length:	
Rotors operating	52 Ft. 11 In.
Fuselage	45 Ft. 2-1/4 In.
Span (max lateral)	10 Ft. 4 In.
Height	11 Ft. 7 In.
Tread	7 Ft. 4 In.
Rotor gnd clearance (static)	7 Ft. 10 In.

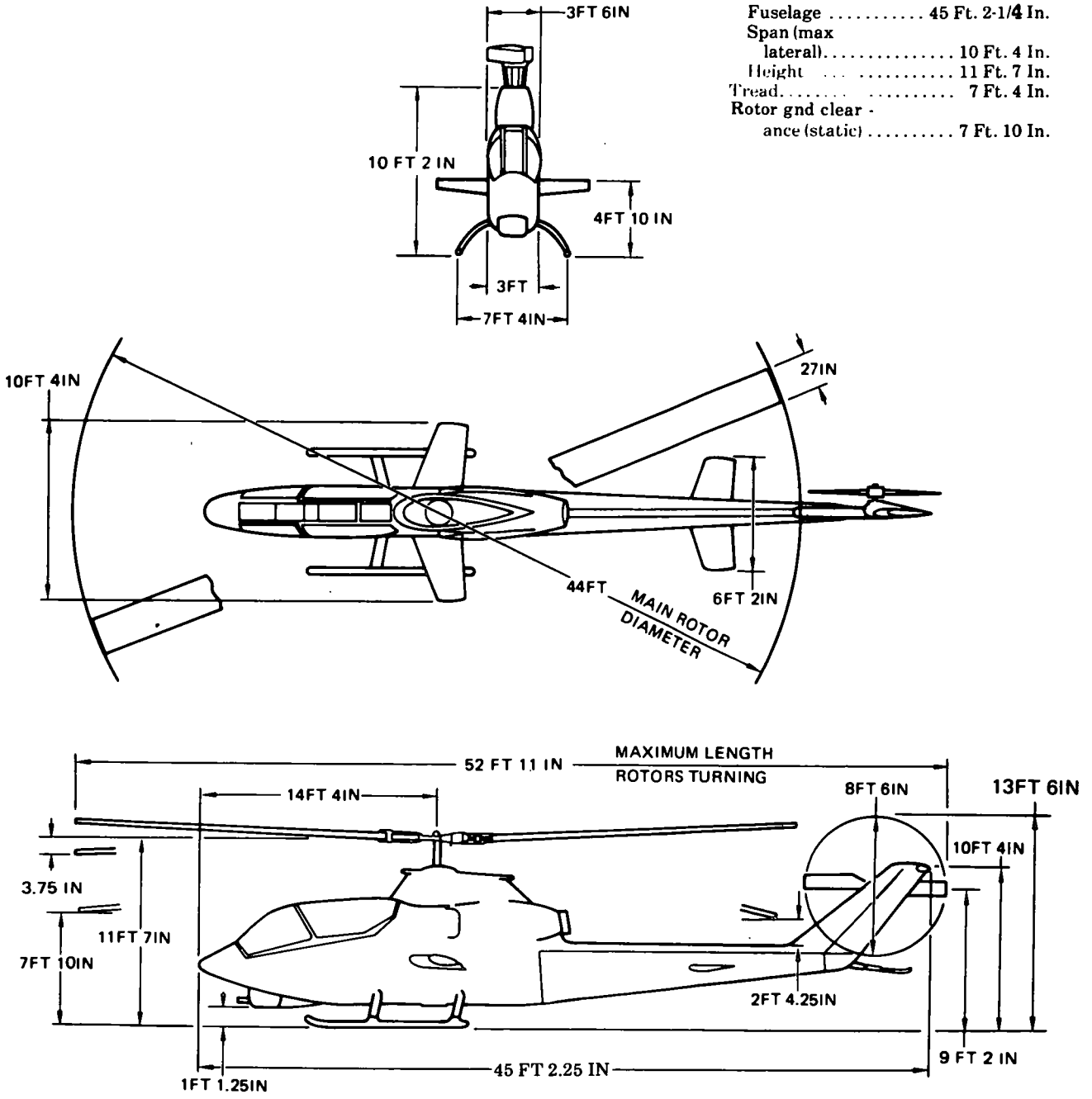


Figure 1-4. Principal Dimensions, AH-1G and TH-1G

1-10. AH-1G/TH-1G* (Hueycobra) Characteristics.

ENGINE

No. and Model ..... (1) T53-L-13B
Mfr ..... Lycoming
Engine Spec. No. 104.33
Type ..... Free Power Turbine
Reduction Gear Ratio 0.3115
Tail Pipe ..... Fixed Area
Augmentation ..... None

ENGINE RATING

SEA LEVEL STD	SHP	RPM	MIN
Military	1400	6600	30
Normal	1250	6600	Cont.

TECHNICAL PUBLICATIONS

AIRFRAME:
TM55-1500-339-S
TM55-1520-22[illegible]-PM
TM55-1520-221-10 & CL
TM55-1520-221-23
TM55-1520-221-23P
TM55-1520-221-PM
TM55-1520-221-MTF
TM55-1500-220-PMD
ENGINE:
TM55-2840-229-24
TM55-2840-229-23P

MISSION AND DESCRIPTION

Mfr's Model: Bell 209

The primary missions of this aircraft arethose of an armed tactical helicopter capable of delivering weapons fire, low altitude high speed flight, search and target acquisition, reconnaissance by fire, multiple weapons fire support, and troop helicopter support. The aircraft is capable of performing these missions from prepared or unprepared areas, under day and night VFR conditions within a temperature range of −25°F to +125°F.

The gas turbine powered "Hueycobra" is of compact design featuring tandem seating to give both pilot and gunner nearly unlimited visibility. Both crew stations have flight control and fire control systems permitting flexibility in division of functions under all normal and emergency situations.

A mission designed fuselage coupled with the 540 rotor system gives a low vibration level plus increased maneuverability and speed. Four wing stores stations and an integral chin turret provide a high degree of armament versatility with the capability of quickly changing a wide combination of weapons to match the desired mission. Reliability and maintainability are ensured through the use of many UH-1 parts which have been combat proven.

Other features include a crashworthy fuel system with closed circuit refueling capability, and a tractor tailrotor system.

DEVELOPMENT

Date of contract ..... 4 April 1966
First flight (Similar aircraft) ..... 7 September 1965
First acft delivered ..... 18 September 1966

FEATURES

Advanced flexible gun turret.
Armor protection for crew and critical components.
Hardpoints for rockets, and external stores on wings.
Stability Control Augmentation System (SAS) eliminates stabilizer bar and provides a stable gun platform.

PERSONNEL

Light Scout, Heavy Scout or Hog Mission
Pilot 1
Gunner 1

Ferry Mission
Pilot 1
Copilot 1

WEIGHTS

LOADING	LB.
Empty	5809 (C)
Combat	
Clean	8521 (C)
Light Scout	9500 (C)
Heavy Scout	9500 (C)
Hog	9500 (C)
Max. Takeoff	9500
Max. Landing	9500

(C) Calculated

FUEL AND OIL

Fuel:
Grade JP-4/5
Spec MIL-T-5624
No. tanks 2
Location ..... Fuselage
Qty ..... 262 gal
Oil:
Spec MIL-L-7808/ MIL-L-23699
No. tanks 1
Location ..... Fuselage
Qty ..... 2.9 gal

AVIONICS / ARMAMENT

Refer to Chapter 2.

UNIT PRICE/NSN

AH-1G, NSN 1520-00-999-5821
LINE K29660,
UNIT PRICE: Refer to Table 4-1.

*TH-1G. Addition of Instructor Flight Controls and Instrument Panel converts the AH-1G to the TH-1G.

1-11. Loading and Performance — Typical Mission AH-1G and TH-1G.

CONDITIONS	MISSION I LIGHT SCOUT	MISSION II HEAVY SCOUT	MISSION III HOG	MISSION IV FERRY (CLEAN)
TAKEOFF WEIGHT . . . . . .(lb)	9171	9500	9500	7671
Fuel at 6.5 lbs/gal (Grade JP-4) . . . . . .(lb)	1572	1277	1025	1672
Payload . . . . . .(lb)	1792	2416	2668	192
Takeoff Power Loading . . . . . .(lb SHP)	8.34	8.64	8.64	6.97
Disk Loading . . . . . .(lb sq ft)	6.04	6.25	6.25	5.05
Autorotation Speed (Min R/D) . . . . . (kn)	65	65	65	65
Takeoff Ground Run at SL . . . . . .(ft)	105	127	127	0
Takeoff to Clear 50 ft . . . . . .(ft)	267	344	344	0
Vertical Rate of Climb at SL . . . . . .(fpm)	-	-	-	1210
Maximum Rate of Climb at SL . . . . .(fpm)	1330	1230	1230	1860
Speed for Max R/C at SL . . . . . (kn)	64	65	65	60
Time: SL to 5000 ft . . . . . .(min)	3.7	4.0	4.0	2.7
Time: SL to 10,000 ft . . . . . .(min)	8.3	9.2	9.2	5.6
Service Ceiling (100 fpm) . . . . . .(ft)	12450	11420	11420	18200
Absolute Hovering Ceiling . . . . . .(ft)	-	-	-	10650
COMBAT RANGE . . . . . .(nmi)	-	-	-	371.1
Average Cruise Speed . . . . . (kn)	-	-	-	141
Cruising Altitude (Initial) . . . . . .(ft)	-	-	-	10000
Cruising Altitude (Final) . . . . . .(ft)	-	-	-	10000
Total Mission Time . . . . . .(hr)	-	-	-	2.7
COMBAT RADIUS . . . . . .(nmi)	141.1	95.3	70.1	-
Average Cruise Speed . . . . . (kn)	133	125	125	-
Cruising Altitude (Outbound)(Min/Max) .(ft)	6350/9800	5350/7250	5600/7200	-
Cruising Altitude (Inbound) . . . . . .(ft)	10000	10000	10000	-
Total Mission Time . . . . . .(hr)	2.4	1.8	1.4	-

1-11. Loading and Performance — Typical Mission AH-1G and TH-1G (Con't).

CONDITIONS	MISSION I LIGHT SCOUT	MISSION II HEAVY SCOUT	MISSION III HOG	MISSION IV FERRY (CLEAN)
COMBAT WEIGHT . . . . . .(lb)	8148	7937	7020	6231
Combat Altitude . . . . . .(ft)	Sea Level	Sea Level	Sea Level	10000
Combat Speed . . . . . (kn)	140	137	132	155
Combat Climb . . . . . .(fpm)	1665	1745	2140	2170
Combat Ceiling (500 ft/min) . . . . . .(ft)	15350	16250	20200	23800
Service Ceiling (100 ft/min) . . . . . .(ft)	16300	17100	21000	24550
Absolute Hovering Ceiling . . . . . .(ft)	8500	9450	13750	17700
Takeoff Ground Run at SL . . . . . .(ft)	0	0	0	0
Takeoff to Clear 50 ft . . . . . .(ft)	0	0	0	0
Maximum Rate of Climb at SL . . . . .(fpm)	1665	1745	2140	2490
Speed for Max R/C at SL . . . . . (kn)	62	61	58	54
Max Speed at SL . . . . . (kn)	140	137	132	149
Basic Speed at 5000 ft . . . . . (kn)	142	139	135	154
LANDING WEIGHT . . . . . .(lb)	7413	7383	6578	6231
Ground Roll at SL . . . . . .(ft)	0	0	0	0
Total from 50 ft . . . . . .(ft)	0	0	0	0

DIMENSIONS	
Rotor dia	44 Ft.
Length:	
Rotors operating	53 Ft.
Fuselage	44 Ft. 9 In.
Span (max lateral)	10 Ft. 9 In.
Height	11 Ft. 7 In.
Tread	7 Ft. 4 In.
Rotor gnd clearance (static)	7 Ft. 10 In.

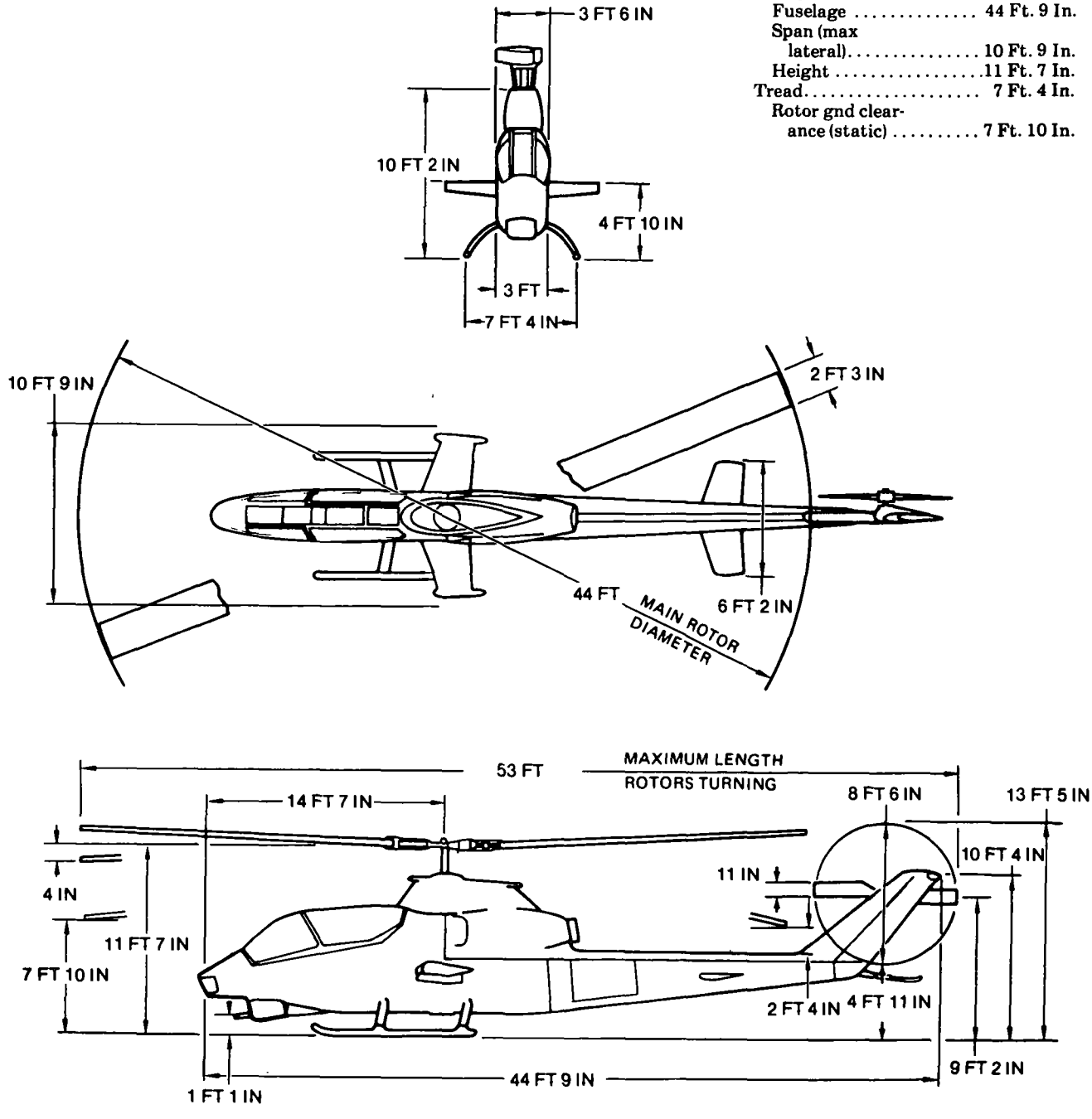


Figure 1-5. Principal Dimensions AH-1S (Mod)

1-12. AH-1S (MOD) Characteristics.

ENGINE

No. and Model ..... (1) T53-L-703
Mfr ..... Lycoming
Engine Spec. No. 104.43
Type ..... Free Power Turbine
Reduction Gear Ratio 0.3115
Tail Pipe ..... Fixed Area
Augmentation ..... None

ENGINE RATINGS

SEA LEVEL STD	SHP	RPM	MIN
Military	1485	6600	30
Normal	1300	6600	Cont.

TECHNICAL PUBLICATIONS

AIRFRAME:
TM55-1500-339-S
TM55-1500-220-PM
TM55-1520-234-10 & CL
TM55-1520-234-23
TM55-1520-234-MTF
TM55-1520-234-23P
TM55-1520-234-PMD
ENGINE:
TM55-2840-229-24
TM55-2840-247-23P

MISSION AND DESCRIPTION

Mfr's Model: Bell 209

The primary mission of this aircraft is anti-armor: providing a stable airborne platform for the tube launched, optically tracked, wire guided missile (TOW) helicopter support. The aircraft is capable of performing this mission from prepared or unprepared areas, under day and night VFR conditions within a temperature range of −25°F to +125°F.

The gas turbine powered "Cobra TOW" is of compact design featuring tandem seating to give both pilot and gunner nearly unlimited visibility. Both crew stations have flight control and fire control systems permitting flexibility in division of functions under all normal and emergency situations.

A mission designed fuselage coupled with the 540 rotor system gives a low vibration level plus increased maneuverability and speed. Four wing stores stations and an integral chin turret provide a high degree of armament versatility with the capability of quickly changing a wide combination of weapons to match the desired mission. Reliability and maintainability are ensured through the use of many UH-1 parts which have been combat proven.

Other features include a crashworthy fuel system with closed circuit refueling capability, and a tractor tailrotor system, TOW missile subsystem and helmet sight fire control subsystem.

DEVELOPMENT

Development Contract ..... May 1974
Production contract ..... Dec. 1974
First Prod. Del. ..... May 1976

FEATURES

Advanced flexible gun turret.
Armor protection for crew and critical components.
Hardpoints for rockets, and external stores on wings.
Stability Control Augmentation System (SAS) eliminates stabilizer bar and provides a stable gun platform.
Helmet Sight Subsystem
TOW Missile Subsystem

PERSONNEL

Anti-Armor Mission
Pilot 1
Co-Pilot/Gunner ... 1

Ferry Mission
Pilot 1
Copilot 1

WEIGHTS

LOADING	LB.	
Empty	6,479	(C)
Combat		
Clean	9,364	(C)
Scout	10,000	(C)
Light Anti-Armor	9,639	(C)
Heavy Anti-Armor	9,975	(C)
Max Takeoff	10,000	
Max Landing	10,000	

(C) Calculated

FUEL AND OIL

Fuel:
Grade JP-4/5
Spec. MIL-T-5624
No. tanks 2
Location ..... Fuselage
Qty ..... 262 gal.
Oil:
Spec MIL-L-7808/ MIL-L-23699
No. tanks 1
Location ..... Fuselage
Qty ..... 3.4 gal.

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1520-00-504-9112
Lin K29694
UNIT PRICE: Refer to Table 4-1.

NOTE: Remainder of AH-1Q Models to be converted to AH-1S Models by December 1978.

D O

DIMENSIONS	
Rotor dia	44 Ft.
Length:	
Rotors operating	53 Ft.
Fuselage	44 FT 7 In.
Span (max lateral)	10 Ft. 8 In.
Height	11 Ft. 7 In.
Tread	7 Ft. 4 In.
Rotor gnd clearance (static)	7 Ft. 10 In.

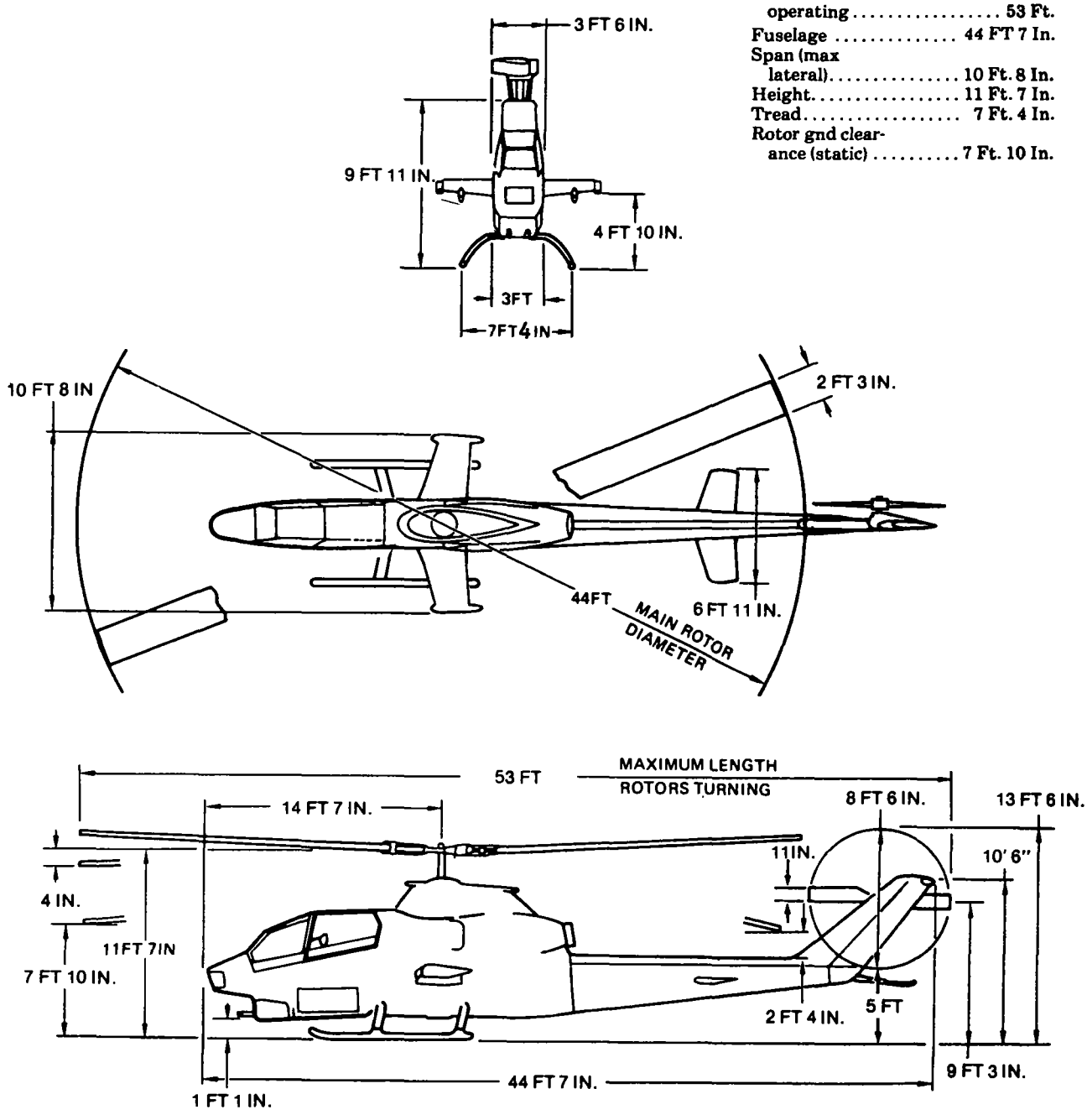


Figure 1-6. Principal Dimensions AH-1S (Prod)

1-13. AH-1S (Prod) Characteristics.

ENGINE

No. and Model ..... (1) T53-L-703
Mfr ..... Lycoming
Engine Spec. No. 104.43
Type ..... Free Power Turbine
Reduction Gear Ratio 0.3115
Tail Pipe ..... Fixed Area
Augmentation ..... None

ENGINE RATINGS

SEA LEVEL STD	SHP	RPM MIN
Military	1485	6600 30
Normal	1290	6600 Cont.

TECHNICAL PUBLICATIONS

AIRFRAME:
TM55-1520-236-10 and CL
TM55-1520-236-23
TM55-1500-339-S
TM55-1500-220-PM
TM55-1520-236-MTF
TM55-1520-236-23P
TM55-1520-236-PMD
ENGINE:
TM55-2840-229-24
TM55-2840-247-23P

MISSION AND DESCRIPTION

Mfr's Model: Bell 209

The primary mission of this aircraft is anti-tank, providing a stable airborne platform for the tube launched, optically tracked, wire guided missile (TOW) helicopter support. The aircraft is capable of performing this mission from prepared or unprepared areas, under day and night VFR conditions within a temperature range of -25°F to +125°F.

The gas turbine powered "Cobra-TOW" is of compact design featuring tandem seating to give both pilot and gunner nearly unlimited visibility. Both crew stations have flight control and fire control systems permitting flexibility in division of functions under all normal and emergency situations.

A mission designed fuselage coupled with the 540 rotor system gives a low vibration level plus increased maneuverability and speed. Four wing stores stations and an integral chin turret provide a high degree of armament versatility with the capability of quickly changing a wide combination of weapons to match the desired mission. Reliability and maintainability are ensured through the use of many UH-1 parts which have been combat proven.

Other features include a crashworthy fuel system with closed circuit refueling capability, and a tractor tailrotor system, TOW missile subsystem and helmet sight fire control subsystem.

DEVELOPMENT

Development Contract ..... Jan 1975
Production contract ..... Dec 1975
First Prod. Del. ..... Mar 1977

FEATURES

Advanced flexible gun turret.
Armor protection for crew and critical components.
Hardpoints for rockets, and external stores on wings.
Stability Control Augmentation System (SAS) eliminates stabilizer bar and provides a stable gun platform.
Helmet Sight Subsystem
TOW Missile Subsystem

PERSONNEL

Anti-Armor Mission
Pilot 1
Co-Pilot/Gunner 1

Ferry Mission
Pilot 1
Co-Pilot 1

WEIGHTS

LOADING	LB.	
Empty	6,479	(C)
Combat		
Clean	9,364	(C)
Scout		
Light Anti-Armor	9,639	(C)
Heavy Anti-Armor	9,975	(C)
Max Takeoff	10,000	
Max Landing	10,000	

(c) Calculated

FUEL AND OIL

Fuel:
Grade JP-4/5
Spec. MIL-T-5624
No. tanks 2
Location ..... Fuselage
Qty ..... 262 gal.
Oil:
Spec MIL-L-7808/ MIL-L-23699
No. tanks 1
Location ..... Fuselage
Qty ..... 2.9 gal.

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1520-00-504-9112
Lin K29694.
UNIT PRICE: Refer to Table 4-1.

1-14. Loading and Performance — Typical Mission AH-1S (MOD) and (PROD).

CONDITIONS	MISSION I SCOUT	MISSION II LIGHT ANTI-ARMOR	MISSION III HEAVY ANTI-ARMOR	MISSION IV FERRY (CLEAN)
TAKEOFF WEIGHT.....(lb)	10,000	9,639	9,975	9,364
Fuel at 6.5 lbs/gal (Grade JP-4)..... (lb)	1,287	1,684	1,684	1,684
Payload.....(lb)	3961	3216	3432	2875
Takeoff Power Loading .....(lb SHP)	7.75	7.47	7.73	7.25
Disk Loading .....(lb sq ft)	6.58	6.34	6.56	6.16
Autorotation Speed (Min R/D) .....(kn)	65	65	65	65
Takeoff Ground Run at SL.....(ft)	0	0	0	0
Takeoff to Clear 50 ft .....(ft)	0	0	0	0
Vertical Rate of Climb at SL.....(fpm)	320	610	335	850
Maximum Rate of Climb at SL .....(fpm)	1,620	1,740	1,640	1,850
Speed for Max R/C at SL .....(kn)	64	65	65	60
Time: SL to 5000 ft.....(min)	3.1	2.8	3.0	2.7
Time: SL to 10,000 ft.....(min)	8.6	5.7	6.1	5.4
Service Celing (100 fpm).....(ft)	12,200	14,800	12,300	15,000
Absolute Hovering Ceiling .....(ft)	11,600	8,000	3,800	10,200
COMBAT RANGE.....(nmi)	—	—	—	320
Average Cruise Speed.....(kn)				130
Cruising Altitude (Initial).....(ft)				10,000
Cruising Altitude (Final) .....(ft)				10,000
Total Mission Time .....(hr)				2.6
COMBAT RADIUS.....(nmi)				
Average Cruise Speed.....(kn)				
Cruising Altitude (Outbound) (Min/Max)..(ft)				
Cruising Altitude (Inbound) .....(ft)				
Total Mission Time .....(hr)	1.4	2.1	2.0	2.4

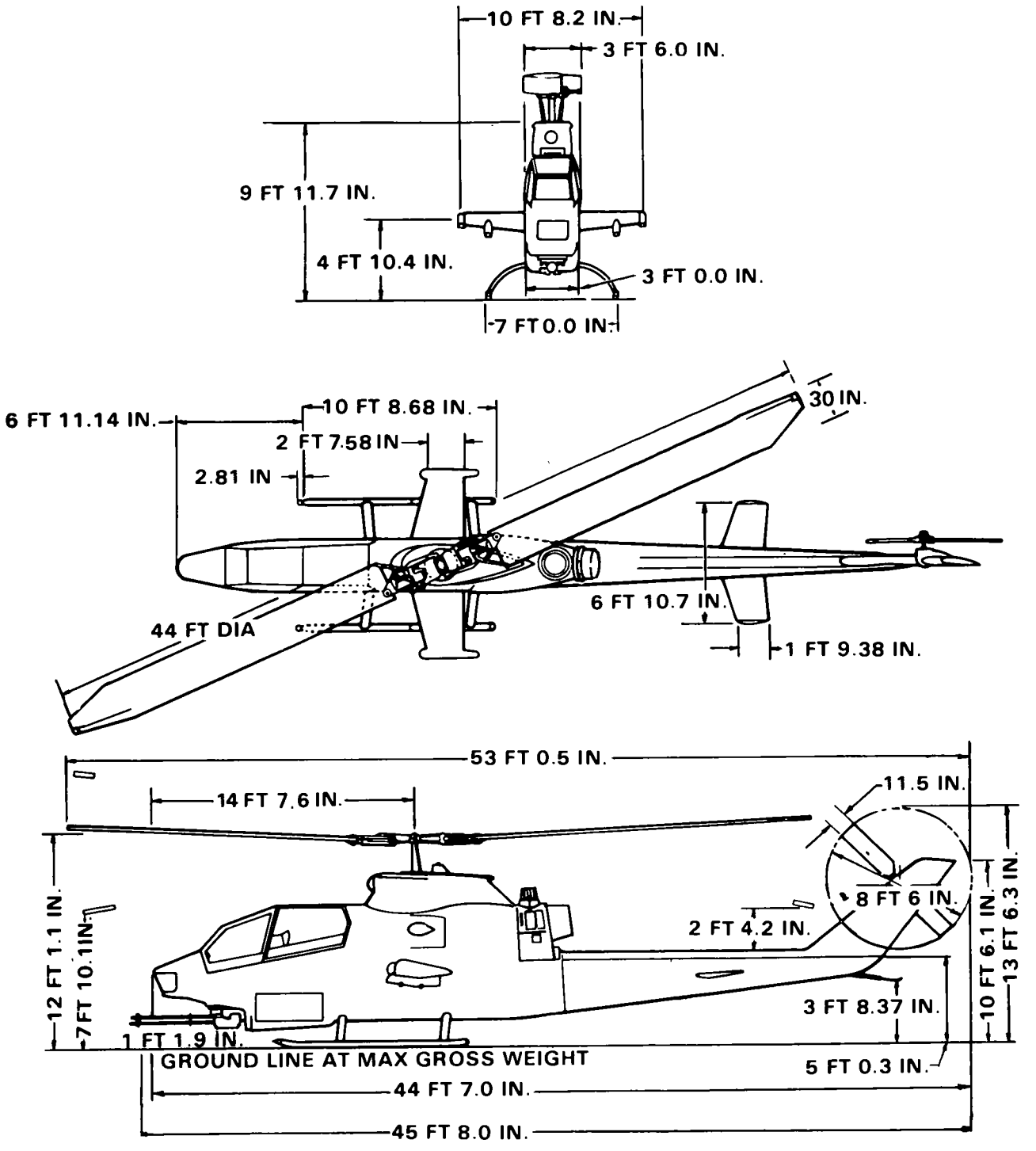


Figure 1-7. Principal Dimensions AH-1S (ECAS)

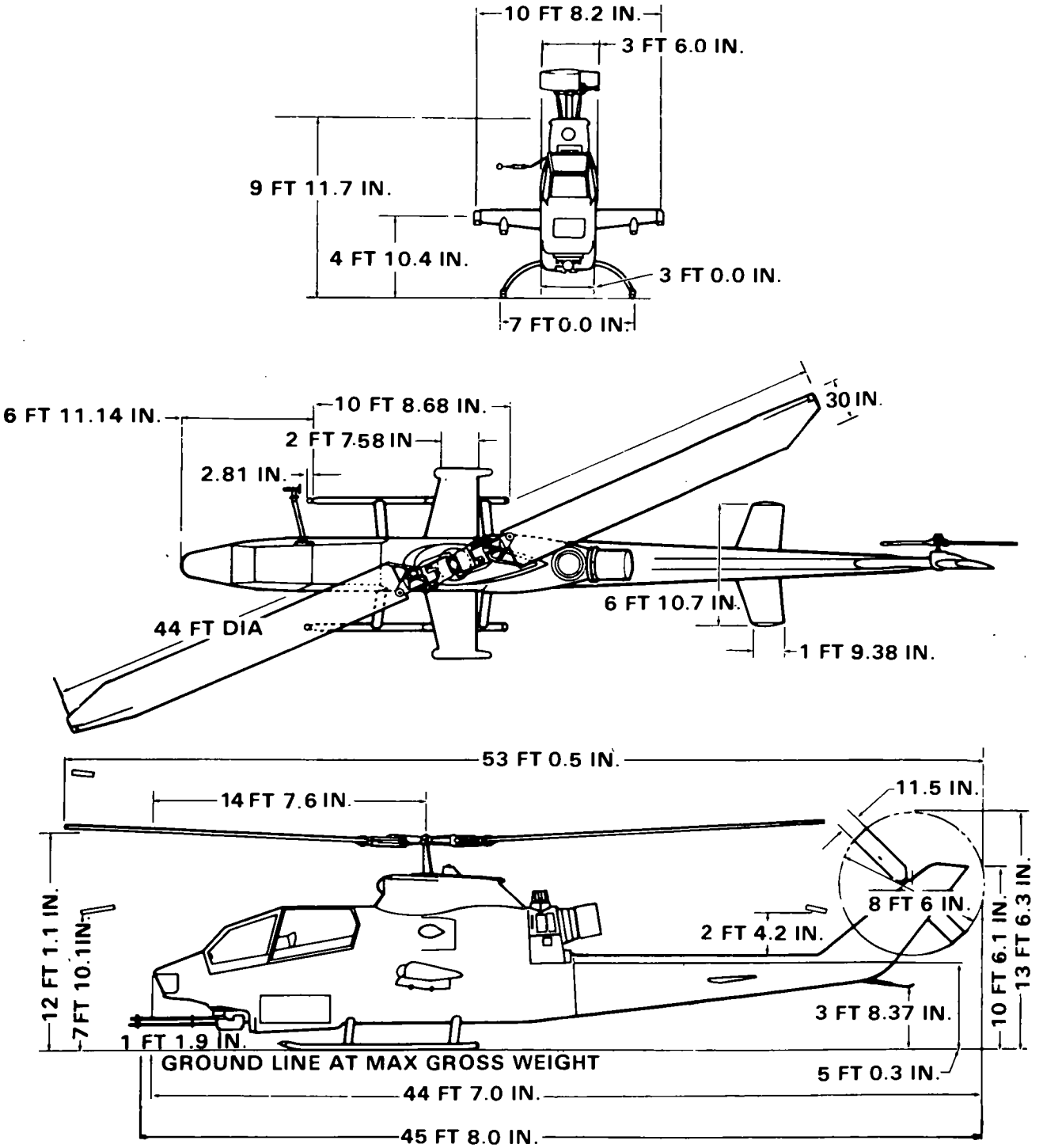


Figure 1-8. Principal Dimensions AH-1S (Modernized)

1-15. AH-1S (ECAS) Characteristics.

ENGINE

No. and Model ..... (1) T53-L-703
Mfr ..... Lycoming
Engine Spec. No. 104.43
Type ..... Free Power Turbine
Reduction Gear Ratio 0.3115
Tail Pipe ..... Fixed Area
Augmentation ..... None

ENGINE RATINGS

SEA LEVEL STD	SHP	RPM MIN
Military	1485	6600 30
Normal	1290	6600 Cont.

TECHNICAL PUBLICATIONS

AIRFRAME:
TM55-1520-236-10 & CL
TM55-1520-236-23
TM55-1520-236-MTF
TM55-1520-236-23P
TM55-1520-236-PMD
ENGINE:
TM55-2840-229-24
TM55-2840-247-23P

MISSION AND DESCRIPTION

Mfr's Model: Bell 209

The primary mission of this aircraft is anti-armor, providing a stable airborne platform for the tube launched, optically tracked, wire guided missile (TOW) helicopter support. The aircraft is capable of performing this mission from prepared or unprepared areas, under day and night VFR conditions within a temperature range of −25°F to +125°F.

The gas turbine powered "Cobra TOW" is of compact design featuring tandem seating to give both pilot and gunner nearly unlimited visibility. Both crew stations have flight control and fire control systems permitting flexibility in division of functions under all normal and emergency situations.

A mission designed fuselage coupled with the 540 rotor system gives a low vibration level plus increased maneuverability and speed. Four wing stores stations and an integral chin turret provide a high degree of armament versatility with the capability of quickly changing a wide combination of weapons to match the desired mission. Reliability and maintainability are ensured through the use of many UH-1 parts which have been combat proven.

The AH-1S (ECAS) has a crashworthy fuel system with closed circuit refueling capability, and a tractor tailrotor system.

DEVELOPMENT

Development contract ..... Jan 1977
Production contract ..... Jun 1977
First Prod. Del. ..... Sep 1978

FEATURES 1/

Armor protection for crew and critical components.
Hardpoints for rockets, and external stores on wings.
Stability Control Augmentation System (SAS) eliminates stabilizer bar and provides a stable gun platform.
Helmet Sight Subsystem
TOW Missile Subsystem
XM138 RMS
XM97E1 Turret Subsystem
10 KVA Alternator

PERSONNEL

Anti-Armor Mission
Pilot 1
Co-Pilot/Gunner 1

Ferry Mission
Pilot 1
Co-Pilot 1

WEIGHTS

LOADING	LB.	
Empty	6,580	(C)
Combat		
Clean	9,541	(C)
Scout	10,000	(C)
Light Anti-Armor	9,661	(C)
Heavy Anti-Armor	9,987	(C)
Max Takeoff	10,000	
Max Landing	10,000	

(c) Calculated

FUEL AND OIL

Fuel:
Grade JP-4/5
Spec. MIL-T-5624
No. tanks 2
Location ..... Fuselage
Qty ..... 262 gal.
Oil:
Spec MIL-L-7808/ MIL-L-23699
No. tanks 1
Location ..... Fuselage
Qty ..... 2.9 gal.

AVIONICS / ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1520-00-504-9112
Lin K29694

UNIT PRICE: Refer to Table 4-1.

NOTE:
1/ AH-1S (ECAS) was initially fielded without the XM138 rocket management subsystem (RMS). Field retrofit began during June 1980.

Reduce to 5½ to 6 inch

1-16. AH-1S (Modernized) Characteristics.

ENGINE

No. and Model ..... (1) T53-L-703
Mfr ..... Lycoming
Engine Spec. No. 104.43
Type ..... Free Power Turbine
Reduction Gear Ratio 0.3115
Tail Pipe ..... Fixed Area
Augmentation ..... None

ENGINE RATINGS

SEA LEVEL STD	SHP	RPM MIN
Military	1485	6600 30
Normal	1290	6600 Cont.

TECHNICAL PUBLICATIONS

AIRFRAME:
TM55-1520-236-10 & 10CL
TM55-1520-239-10 & 10CL
TM55-1520-236-23
TM55-1520-239-23
TM55-1520-236-23P
TM55-1520-239-23P
TM55-1520-236-MTF
TM55-1500-220-PM
TM55-1500-220-PMD
ENGINE:
TM55-2840-229-24
TM55-2840-247-23P

MISSION AND DESCRIPTION

Mfr's Model: Bell 209

The primary mission of this aircraft is anti-armor, providing a stable airborne platform for the tube launched, optically tracked, wire guided missile (TOW) helicopter support. The aircraft is capable of performing this mission from prepared or unprepared areas, under day and night VFR conditions within a temperature range of −25°F to +125°F.

The gas turbine powered "Cobra TOW" is of compact design featuring tandem seating to give both pilot and gunner nearly unlimited visibility. Both crew stations have flight control and fire control systems permitting flexibility in division of functions under all normal and emergency situations. The Modernized Cobra has an improved fire control system and doppler navigation system.

A mission designed fuselage coupled with the 540 rotor system gives a low vibration level plus increased maneuverability and speed. Four wing stores stations and an integral chin turret provide a high degree of armament versatility with the capability of quickly changing a wide combination of weapons to match the desired mission. Reliability and maintainability are ensured through the use of many UH-1 parts which have been combat proven.

The AH-1S (Modernized) has a crashworthy fuel system with closed circuit refueling capability, and a tractor tailrotor system.

DEVELOPMENT

Development contract ..... Jan 1977
Production contract ..... Jun 1977
First Prod. Del. ..... Sep 1978

FEATURES 1/

Armor protection for crew and critical components.
Hardpoints for rockets, and external stores on wings.
Stability Control Augmentation System (SAS) eliminates stabilizer bar and provides a stable gun platform.
Helmet Sight Subsystem
TOW Missile Subsystem
XM138 RMS
XM97E1 Turret Subsystem
10 KVA Alternator

PERSONNEL

Anti-Armor Mission
Pilot 1
Co-Pilot/Gunner 1

Ferry Mission
Pilot 1
Co-Pilot 1

WEIGHTS

LOADING	LB.	
Empty	6,598	(C)
Combat		
Clean	9,541	(C)
Scout	10,000	(C)
Light Anti-Armor	9,661	(C)
Heavy Anti-Armor	9,987	(C)
Max Takeoff	10,000	
Max Landing	10,000	

(c) Calculated

FUEL AND OIL

Fuel.
Grade JP-4/5
Spec. MIL-T-5624
No. tanks 2
Location ..... Fuselage
Qty ..... 262 gal.
Oil:
Spec MIL-L-7808/ MIL-L-23699
No. tanks 1
Location ..... Fuselage
Qty ..... 2.9 gal

AVIONICS / ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1520-00-504-9112
Lin K29694

UNIT PRICE: Refer to Table 4-1.

1-17. **Loading and Performance — Typical Mission AH-1S (ECAS and MODERNIZED).**

CONDITIONS	MISSION I SCOUT	MISSION II LIGHT ANTI-ARMOR	MISSION III HEAVY ANTI-ARMOR	MISSION IV FERRY (CLEAN)
TAKEOFF WEIGHT.....(lb)	10,000	9,661	9,987	9,541
Fuel at 6.5 lbs/gal (Grade JP-4).....(lb)	1,101	1,684	1,532	1,684
Payload.....(lb)	3,461	3,081	3,407	2,961
Takeoff Power Loading.....(lb SHP)	7.75	7.47	7.73	7.25
Disk Loading.....(lb sq ft)	6.58	6.34	6.56	6.16
Autorotation Speed (Min R/D).....(kn)	65	65	65	65
Takeoff Ground Run at SL.....(ft)	0	0	0	0
Takeoff to Clear 50 ft.....(ft)	0	0	0	0
Vertical Rate of Climb at SL.....(fpm)	320	610	335	850
Maximum Rate of Climb at SL.....(fpm)	1,620	1,740	1,640	1,850
Speed for Max R/C at SL.....(kn)	64	65	65	60
Time: SL to 5000 ft.....(min)	3.1	2.8	3.0	2.7
Time: SL to 10,000 ft.....(min)	8.6	5.7	6.1	5.4
Service Celing (100 fpm).....(ft)	12,200	14,800	12,300	15,000
Absolute Hovering Ceiling.....(ft)	11,600	8,000	3,800	10,200
COMBAT RANGE.....(nmi)	—	—	—	320
Average Cruise Speed.....(kn)				130
Cruising Altitude (Initial).....(ft)				10,000
Cruising Altitude (Final).....(ft)				10,000
Total Mission Time.....(hr)				2.6
COMBAT RADIUS.....(nmi)				
Average Cruise Speed.....(kn)				
Cruising Altitude (Outbound) (Min/Max)..(ft)				
Cruising Altitude (Inbound).....(ft)				
Total Mission Time.....(hr)	1.4	2.1	2.0	2.4

1-18. **Loading and Performance — Typical Mission AH-1S (MOD) (PROD) (ECAS and MODERNIZED).**

CONDITIONS	MISSION I SCOUT	MISSION II LIGHT ANTI-ARMOR	MISSION III HEAVY ANTI-ARMOR	MISSION IV FERRY (CLEAN)
COMBAT WEIGHT ..... (lb)	9,500	9,140	9,400	8,600
Combat Altitude ..... (ft)	Sea Level	Sea Level	Sea Level	10,000
Combat Speed ..... (kn)	0 to 130	0 to 130	0 to 130	140
Combat Climb ..... (fpm)	1,800	1,800	1,800	2,000
Combat Ceiling (500 ft/min) ..... (ft)	—	—	—	—
Service Ceiling (100 ft/min) ..... (ft)	14,800	16,000	14,800	19,000
Absolute Hovering Ceiling ..... (ft)				
Takeoff Ground Run at SL ..... (ft)	0	0	0	0
Takeoff to Clear 50 ft ..... (ft)	0	0	0	0
Maximum Rate of Climb at SL ..... (fpm)	1,800	1,800	1,800	2,000
Speed for Max R/C at SL ..... (kn)	64	64	64	64
Max Speed at SL ..... (kn)	140	140	140	140
Basic Speed at 5000 ft. ..... (kn)	140	140	140	140
LANDING WEIGHT ..... (lb)	8,513	7,923	8,043	7,864
Ground Roll at SL ..... (ft)	0	0	0	0
Total from 50 ft ..... (ft)	0	0	0	0

1-19. Performance Notes, AH-1G (Cobra - TOW).

LIGHT SCOUT MISSION – Armed Tactical Helicopter – Radius

Start engine; warm-up, takeoff, and climb on course at normal power to 6350 feet initial cruise altitude. Maintain 55-feet-per-minute rate of climb at cruise speed to an altitude of 9800 feet. Descend to sea level and fire rockets during a period of ten (10) minutes combat at normal power. Climb on course to 10,000 feet at normal power and return to home base at cruise speed. Range free allowances are two (2) minutes of normal power for warm-up and takeoff, ten (10) minutes of combat time at normal power, plus ten percent of initial fuel for landing and reserve.

HEAVY SCOUT MISSION – Armed Tactical Helicopter – Radius

Start engine, warmup, takeoff, and climb on course at normal power to 5350 feet initial cruise altitude. Maintain 41.6 feet-per-minute rate of climb at cruise speed to an altitude of 7250 feet. Descend to sea level and fire rockets during a period of ten (10) minutes combat at normal power. Climb on course to 10,000 feet at normal power and return to home base at cruise speed. Range free allowances are two (2) minutes of normal power for warm-up and takeoff, ten (10) minutes of combat time at normal power, plus ten percent of initial fuel for landing and reserve.

HOG MISSION – Armed Tactical Helicopter – Radius

Start engine, warm-up, takeoff, and climb on course at normal power to 5600 feet initial cruise altitude. Maintain 50-feet-per-minute rate of climb at cruise speed to an altitude of 7200 feet. Descend to sea level and fire rockets during a period of ten (10) minutes combat at normal power. Climb on course to 10,000 feet at normal power and return to home base at cruise speed. Range free allowances are two (2) minutes of normal power for warm-up and takeoff, ten (10) minutes of combat time at normal power, plus ten percent of initial fuel for landing and reserve.

FERRY MISSION – Clean (Without Auxiliary Tanks) – Range

Start engine, warm-up, takeoff, and climb on course at normal power to 10,000 feet initial cruise altitude. Fly out at cruise speeds until ninety percent of initial fuel is consumed and land at remote base. Range free allowance include two (2) minutes at normal rated power for warm-up and takeoff, and ten percent of initial fuel for landing and reserve.

GENERAL NOTES:

a. Cruise speed as used above denotes airspeed for long-range operation and is the greater of the two speeds at which ninety-nine percent of the maximum miles per pound of fuel are attainable at the momentary weight and altitude.

b. Data do not include ground effect.

PERFORMANCE BASIS:

a. Power required is based upon "Engineering Phase B Flight-Test Data".

b. Power available and fuel flow are based on Lycoming Model Specification No. 104.33, and includes particle separators and filters.

NOTE: Performance Notes Not Available for AH-1S Models.

Source: TSARCOM-DRCPM-CO

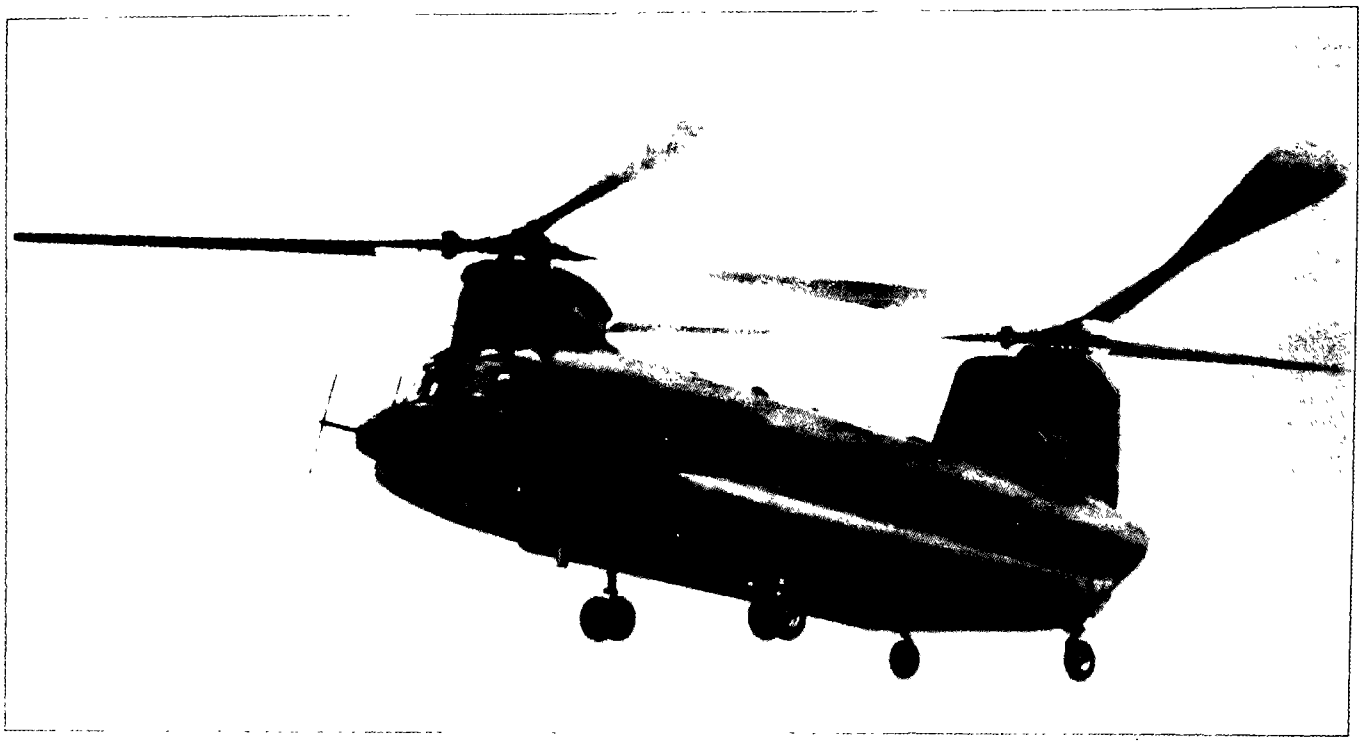


Figure 1-9. CH-47A, B, C and D (Chinook), typical
(minor differences apparent between A, B, C and D models)

DIMENSIONS

Rotor dia	59 Ft. 1-1/4 In.
Length:	
Rotor operating	97 Ft. 6-1/2 In.
Rotors folded	51 Ft.
Fuselage	51 Ft.
Height	18 Ft. 6-1/2 In.
Tread	11 Ft. 11 In.
Main rotor gnd clearance:	
Idling (fwd)	10 Ft. 11 In.
(aft)	18 Ft. 9 In.
Static (fwd)	7 Ft. 8 In.
(aft)	17 Ft. 1 In.

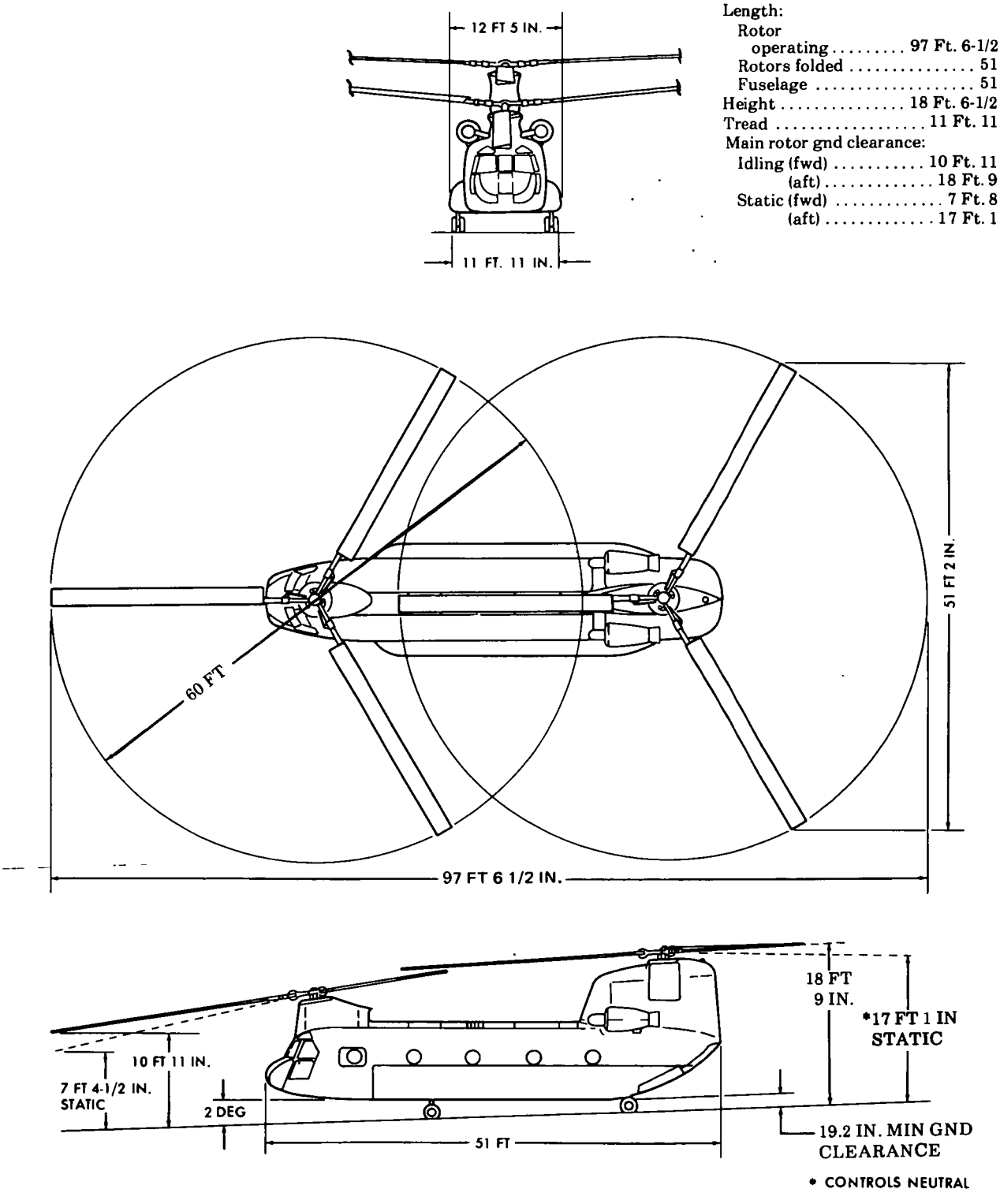


Figure 1-10. Principal Dimensions, CH-47A (Chinook)

1-20. CH-47A (Chinook) Characteristics.

ENGINE

No. & model . . (2) T55-L-7B
Mfr . . . . . Lycoming
Engine spec No . .
T55-L-7/7B 124.20-A
T55-L-7C 124.31

ENGINE RATINGS

	SHP	RPM	ALT	MIN
T55-L-7				
Military	2650	15,150	SL	30
Normal	2250	15,000	SL	Cont.
T55-L-7B				
Military	2650	15,800	SL	30
Normal	2250	15,000	SL	Cont.
T55-L-7C				
Max	2850	16,000	SL	10
Military	2850	15,750	SL	30
Normal	2500	15,350	SL	Cont.

TECHNICAL PUBLICATIONS

AIRFRAME:
TM 55-1500-210-MTF
TM 55-1500-210-L
TM 55-1520-209-CL
TM 55-1520-209-PMS
TM 55-1520-209-10
TM 55-1520-209-23
TM 55-1520-209-23P
TM 55-1520-241-S
DMWR 55-1500-210

ENGINE:
TM 55-2840-234-24/1
TM 55-2840-234-23P
TM 55-2840-249-23
DMWR 55-2840-106

MISSION AND DESCRIPTION

Mfr's Model: Vertol

The principal mission of the CH-47A helicopter is the transport of cargo, troops, and equipment within the combat area. In addition, this helicopter is suitable for special support functions. It is suitable for operations during day, night, visual, and instrument conditions.

The CH-47A helicopter is a twin-turbine-engine, tandem rotary-wing aircraft. It is powered by two Lycoming T55-L-7 shaft turbine engines mounted on the aft fuselage. The engines simultaneously drive two tandem three-bladed rotary wings through a combining transmission, drive shafting, and reduction transmission. The forward transmission is mounted in the pylon above the cockpit. The aft transmission, the combining transmission, and drive shafting are located in the aft pylon section. A gas-turbined auxiliary power unit, used for starting the engines, is mounted in the aft pylon section. Pods on the sides of the fuselage contain fuel tanks. The helicopter is equipped with nonretractable quadricycle landing gear. The aft wheels are full-swivel type. The entrance door is located at the forward right side of the cabin fuselage section. At the rear of the cabin fuselage section is a hydraulically powered loading ramp. A 16,000 pound capacity cargo hook assembly is provided for transporting external loads. Cargo compartment capacity same for all models (1450 cubic ft.).

DEVELOPMENT

Date of contract . . . . . 27 June 1960
First flight . . . . . 6 September 1961
Production status . . . . . Completed May 1967

CAPACITIES

Cargo compartment:
Floor . . . . . 228-3/4 sq ft
Length . . . . . 30 ft, 6 in.
Width . . . . . 7 ft, 6 in.
Height . . . . . 6 ft, 6 in.
Volume . . . . . 1487 cu ft
Forward door:
Height . . . . . 5 ft, 6 in.
Width . . . . . 3 ft
Cargo ramp door:
Length . . . . . 6 ft, 6 in.
Width . . . . . 7 ft, 6 in.

PERSONNEL

Crew (normal) 4
Troops 33
Litters 24

WEIGHTS

	LB	L.F.
Empty (SPFG) . .	18,084	
Design gross wt . .	28,550	2.67
Max alt gross wt .	33,000	2.00
Max takeoff . . .	33,000	2.00
Max landing . . .	33,000	2.00

FUEL AND OIL

Fuel:
Grade JP-4
Spec MIL-T-5624
No. tanks:
Nacelle . . . . (2) 620 gal (50 percent self-sealing)
630 gal (non-self-sealing)
566 gal (crash resistant)
Oil:
Spec
Temps above 25°F MIL-L-23699
Temps below 25°F MIL-L-7808
No. tanks 2
Location . . . . Integral with engine
Qty . . . . . 7 gal

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

CH-47A, NSN 1520-00-633-6836,
LIN K30378,
UNIT PRICE: Refer to Table 4-1.

1-21. Loading and Performance— Typical Mission, CH-47A (Chinook).

CONDITIONS	MISSION	MISSION	MISSION FERRY
	I	II	III
Gross weight ..... (lb) ...	28,262	33,000	33,000
Weight empty ..... (lb) ...	17,932	18,112	17,552
Payload ..... (lb) ...	6000	13,400	---
Radius of action ..... (nmi) ...	100	20	---
Ferry range ..... (nmi) ...	---	---	866
Cruise altitude ..... (ft) ...	SL	SL	6000
Cruise speed ..... (kn) ...	130	110	110
V_{Max} @ SL military power ..... (kn) ...	130	110	110
V_{Max} @ SL normal power ..... (kn) ...	130	110	110
V_{Max} @ 5000 ft, normal power ..... (kn) ...	114	94	94
Hover ceiling OGE 95°F, military power, std atmosphere ..... (ft) ...	6000	7900	7900
Hover ceiling IGE military power, std atmosphere .. (ft) ...	11,900	9200	9200
Service ceiling			
Normal power ..... (ft) ...	11,900	9200	9200
Military power 1 eng out ..... (ft) ...	6000	1400	1400
R/C Max – military power – SL ..... (ft/min) ...	2750	2160	2166

1. All performance based on NASA standard atmosphere unless otherwise noted.
2. V_{Max} reflects airspeed limitations specified in TM55-1520-209-10.
3. CH-47A model specifications 114-X-601.

1-22. Performance Notes, CH-47A (Chinook).

FORMULA: MISSION I

Deliver 6000-pound internal payload to any point 100 nautical miles and return with 3000-pound internal payload. Cruise at sea level. Land with 10 percent of initial fuel reserve.

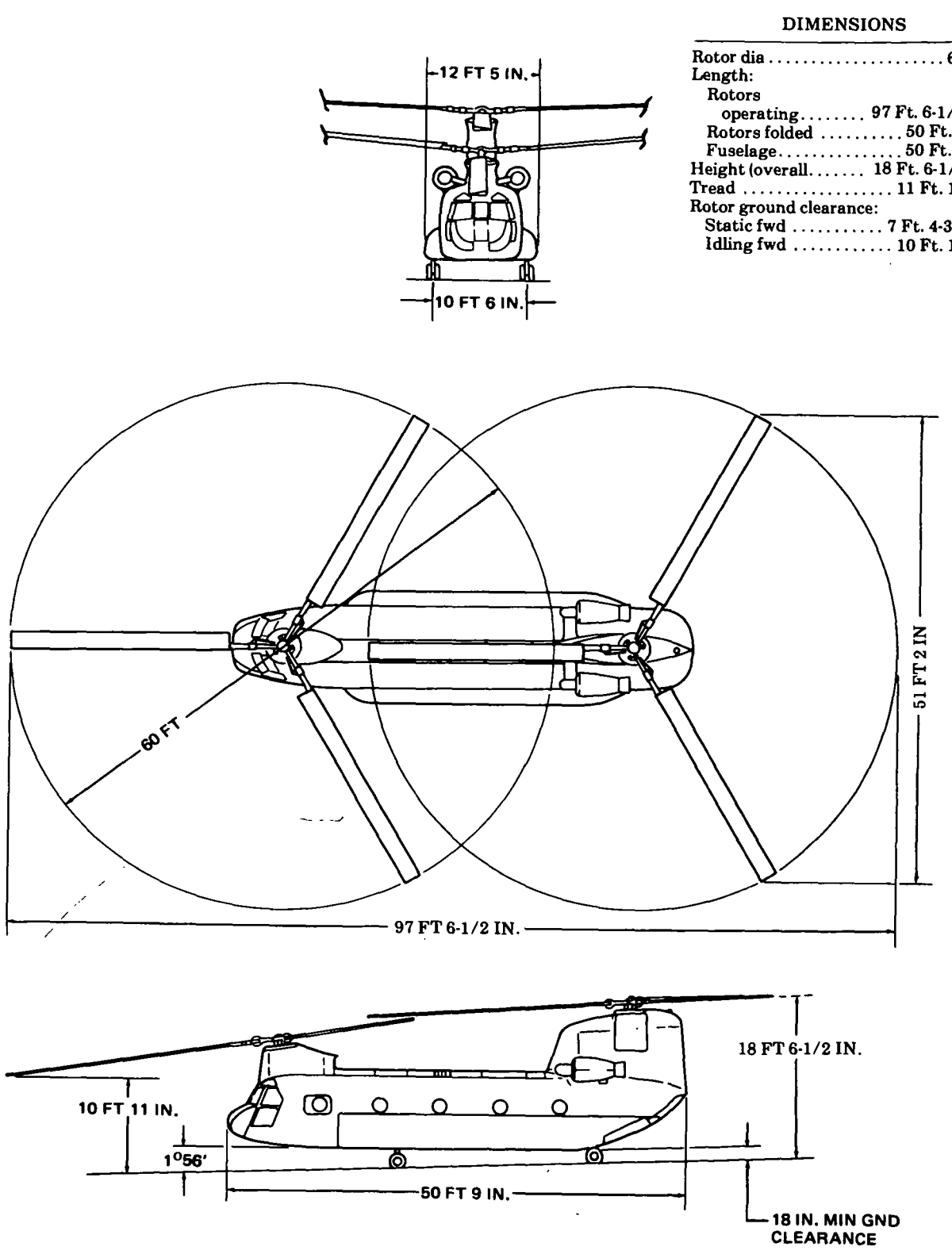
FORMULA: MISSION II

Deliver 13,400-pound external payload to any point 20 nautical miles and return. Equivalent flat plate of external cargo = 26 sq ft. Cruise at sea level. Return with fuel reserve for 10-minute cruise at return gross weight.

FORMULA: MISSION III

Ferry Range of 866 nautical miles. Land with 10 percent of initial fuel reserve. Climb to 6000 feet, 256 nautical miles. Cruise 6000 feet for 610 nautical miles. Total ferry time: 7 hours, 50 minutes.

Source: TSARCOM-DRSTS-WC



DIMENSIONS

Rotor dia	60 Ft.
Length:	
Rotors operating	97 Ft. 6-1/2 In.
Rotors folded	50 Ft. 9 In.
Fuselage	50 Ft. 9 In.
Height (overall	18 Ft. 6-1/2 In.
Tread	11 Ft. 11 In.
Rotor ground clearance:	
Static fwd	7 Ft. 4-3/4 In.
Idling fwd	10 Ft. 11 In.

Figure 1-11. Principal Dimensions, CH-47B and C (Chinook)

1-23. CH-47B (Chinook) Characteristics.

ENGINE

No. & Model	(2) T55-L-7C
Mfr	Lycoming
Engine spec No. T55-L-7C	124.31
Engine /rotor gear ratio	65.93:1

ENGINE RATINGS

	SHP	RPM	ALT	MIN
Maximum	2850	16000	SL	10
Military	2850	15750	SL	30
Normal	2500	15350	SL	Cont

TECHNICAL PUBLICATION

AIRFRAME:
- TM 55-1500-210-MTF
- TM 55-1500-210-L
- TM 55-1520-227-CL-1
- TM 55-1520-227-PM
- TM 55-1520-227-PMD
- TM 55-1520-227-PMS
- TM 55-1520-227-10-1
- TM 55-1520-227-23
- TM 55-15k20-209-23P
- TM 55-1520-241-S
- DMWR 55-1500-210

ENGINE:
- TM 55-2840-234-24/1
- TM 55-2840-234-23P
- TM 55-2840-249-23
- DMWR 55-2840-106

MISSION AND DESCRIPTION

Mfr's Model: Vertol

The principal mission of the CH-47B helicopter is to provide air transportation for troops and cargo. The aircraft can also be utilized for rescue of personnel.

The CH-47B is a large tandem rotor helicopter with built-in accomodations for 24 litter patients and 2 attendants or 33 troops and troop commander. The helicopter is equipped with an unobstructed 30-foot long cargo compartment with straight-in rear loading and has a capacity of over 1450 cubic feet. Other features include an external cargo hook of 10-ton capacity and a winch system for loading an auxiliary power unit which powers the utility hydraulic system, thus eliminating the requirement for external ground power sources; stability system provided through Vertol SAS; and provisions for utilizing collapsible fuel tanks to increase the fuel capacity by 2000 gallons. The complete helicopter is designed for operations in temperatures ranging from – 25° F to +125°F.

DEVELOPMENT

Date of contract	June 1966
First flight	October 1966
Production status	Completed February 1968

CAPACITIES

Cargo compartment:	
Floor	228-3/4 sq ft
Length	30 ft, 6 in.
Width	7 ft, 6 in.
Height	6 ft, 6 in.
Volume	1487 cu ft
Forward door:	
Height	5 ft, 6 in.
Width	3 ft
Cargo ramp door:	
Height	6 ft, 6 in.
Width	7 ft, 6 in.

PERSONNEL

Crew	4
Litters	24
or	
Troops	33

WEIGHTS

	LB	L.F.
Empty	*19,153	
Basic	*19,194	
Design	33,000	3.00
Combat	*21,734	
Max alternate gross weight	40,000	2.54
Normal takeoff	33,000	3.00
Alternate takeoff	40,000	2.54
Max landing	40,000	2.54

*For basic mission.

FUEL AND OIL

Fuel:	
Grade	JP-4
Spec	MIL-T-5624
No. tanks:	
Fuselage	(2) 620 gal 566 gal (crash resistant)
Oil:	
Engine contained oil supply	
Spec	
Temps above 25°F.	MIL-L-23699
Temps below 25°F.	MIL-L-7808
Qty	7 gal

AVIONICS / ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

CH-47B, NSN 1520-00-990-2941
LINE K30383,
UNIT PRICE: Refer to Table 4-1.

1-24. Loading and Performance — Typical Mission, CH-47B (Chinook).

CONDITIONS	BASIC MISSION I	BASIC MISSION (DESIGN GW) II	PRIMARY MISSION III	EXTERNAL PAYLOAD MISSION IV	MAXIMUM FERRY MISSION V
Estimated gross weight ..... (lb)...	30,900	33,000	40,000	40,000	40,000
Payload guaranteed (outbound) ..... (lb)...	6,000	-	-	-	-
Payload guaranteed (inbound) ..... (lb)...	3,000	-	-	-	-
Payload estimated (outbound) ..... (lb)...	7,000	9,000	15,900	18,800	1,075
Payload estimated (inbound) ..... (lb)...	3,500	4,500	7,935	0	-
V_{max} at SL/STD, military power ..... (kn)...	168 2/	165 2/	145 2/	138 1/,2/	145 2/
Max cruise speed at SL/STD, normal power,					
Guaranteed ..... (kn)...	-	150	-	-	-
Estimated ..... (kn)...	166	163	142	132 1/	142
V-Cruise (best range) at SL/STD ..... (kn)...	145	144	134	100 3/	134
V-Cruise (best range) at 5000 F ..... (kn)...	138	134	114	100	114
Max rate-of-climb at SL/STD military power ..... (ft/min)...	2,440 2/	2,200 2/	1,520 2/	1,440	1,520
Vertical rate-of-climb at SL/STD, maximum power ..... (ft/min)...	2,300 2/	1,800 2/	60	60	60
Service ceiling at normal power ..... (ft)...	18,000	16,200	9,550	8,950	9,550
Service ceiling, single engine at military power					
Guaranteed ..... (ft)...	6,000	-	-	-	-
Estimated ..... (ft)...	6,050	3,650	-	-	-
Hover ceiling, OGE at STD temperature maximum power ..... (ft)...	12,850	10,650	700 2/	700 2/	700 2/
Hover ceiling, IGE at STD temperature maximum power, 10 ft wheel height ..... (ft)...	16,300	14,200	7,400	7,400	7,400
Radius of action					
Guaranteed ..... (nmi)...	100	-	-	-	-
Estimated ..... (nmi)...	100	100	95	20	-
Ferry range ..... (nmi)...	-	-	-	-	1,090

1-24. Loading and Performance — Typical Mission, CH-47B (Chinook) (Con't).

NOTES:

1/With external payload equivalent to 26 Sq. Ft. drag area.

2/Transmission limit.

3/Mission cruise speed.

The above table reflects performance capability only. For approved operational limits which consider all pertinent factors, see TM55-1520-227-10/1

For Mission I the helicopter shall be capable of hovering at 6000 ft. for ten minutes at 95°F, OGE at the gross weight required for the accomplishment of Mission I (guaranteed). The Mission I gross weight includes an outbound payload of 6000 lb., return payload of 3000 lb., and fuel for a radius of 100 nmi.

During Mission III the helicopter shall be capable of hovering out-of-ground effect at sea level standard, maximum power and at a gross weight of 39,500 pounds (guaranteed).

1-25. Performance Notes, CH-47B (Chinook).

FORMULA: RADIUS MISSIONS I & II

Warm up, take off, climb on course to 5000 feet at normal power, cruise out at long range speeds to remote base, land, and unload cargo. Without refueling, warm up, take off, climb on course to 5000 feet at normal power, and return at long range speeds. Range-free allowances are 2 minutes of normal power for each warmup and takeoff, plus 10 percent of initial fuel for reserve.

FORMULA: RADIUS MISSION III

Warm up, take off, cruise out at long range speeds at sea level to remote base, land, and unload outbound cargo, load inbound cargo. Without refueling, warm up, take off, return at long range speeds at sea level, land, and unload cargo. Range-free allowances are 2 minutes of normal power for each warmup and takeoff, plus 10 percent of initial fuel for reserve.

FORMULA: RADIUS MISSION IV

Warm up, take off, cruise out at 100 knots at sea level with external cargo to remote base, detach cargo, and land. Without refueling, warm up, take off, and return at long range speeds at sea level. Range-free allowances are 2 minutes of normal power for each warmup and takeoff, plus 10 minutes of cruise fuel for reserve.

FORMULA: RANGE MISSIONS I & II

Warm up, take off, climb on course to 5000 feet at normal power, cruise out at long range speeds until 90 percent of initial fuel is consumed, land, and unload cargo. Range-free allowances are 2 minutes of normal power for warmup and takeoff, plus 10 percent of initial fuel for reserve.

FORMULA: RANGE MISSION III

Warm up, take off, cruise out at long range speeds at sea level until 90 percent of initial fuel is consumed, land, and unload cargo. Range-free allowances are 2 minutes of normal power for warmup and takeoff, plus 10 percent of initial fuel for reserve.

FORMULA: RANGE MISSION IV

Warm up, take off, cruise out at 100 knots at sea level with external cargo until 10 minutes of cruise fuel remains, detach cargo, and land. Range-free allowances are 2 minutes of normal power for warmup and takeoff, plus 10 minutes of cruise fuel for reserve.

FORMULA: RANGE MISSION V

Warm up, take off, climb on course to optimum cruise altitude at cruise speed, cruise out at long range speeds until 90 percent of initial fuel is consumed. Range-free allowances are 2 minutes of normal power for warmup and takeoff, plus 10 percent of initial fuel for reserve.

PERFORMANCE REFERENCES

Vertol Report 114-P-J-602. Detail Specifications for the Model CH-47B Helicopter.

Boeing-Vertol Report 114-AD-601. Estimated Performance Capability of CH-47B and CH-47C Helicopters.

Lycoming Model Specification 124.31, T55-L-7C Shaft Turbine Engine.

Source: TSARCOM-DRSTS-WC

1-26. CH-47C (Chinook) Characteristics.

ENGINE

No. & model .... (2) T55-L-11D
Mfr ..... Lycoming
Engine spec No .. 124.54
Engine/Rotor gear ratio 64.05:1

ENGINE RATINGS

	SHP	RPM	ALT	MIN
Max ...	3750	16000	SL	10
Mil	3750	16000	SL	30
Nor ...	3300	15400	SL	Cont

TECHNICAL PUBLICATIONS

AIRFRAME:
TM 55-1500-210-MTF
TM 55-1500-210-L
TM 55-1520-227-CL-2
TM 55-1520-227-PM
TM 55-1520-227-PMD
TM 55-1520-227-PMS
TM 55-1520-227-10-2
TM 55-1520-227-23
TM 55-1520-209-23P
TM 55-1520-241-S
DMWR 55-1500-210

ENGINE:
TM 55-2840-234-24/2
TM 55-2840-234-23P
TM 55-2840-249-23
DMWR 55-2840-118

MISSION AND DESCRIPTION

Mfr's Model: Vertol

The principal mission of the CH-47C is to provide air transportation for troops and cargo. The aircraft can also be utilized for rescue of personnel.

The CH-47C is a large tandem rotor helicopter with built-in accommodations for 24 litter patients and 2 attendants or 33 troops and troop commander. The helicopter is equipped with an unobstructed 30-foot long cargo compartment with straight-in rear loading and has a capacity of over 1450 cubic feet. Other features include an external cargo hook of 10-ton capacity and a winch system for loading an auxiliary power unit which powers the utility hydraulic system, thus eliminating the requirements for external ground power sources; stability system provided through Vertol SAS; and provisions for utilizing collapsible fuel tanks to increase the fuel capacity by 2000 gallons. The complete helicopter is designed for operations in temperatures ranging from −25°F to +125°F.

DEVELOPMENT

Date of contract ..... June 1966
Aircraft in production ..... January 1969

CAPACITIES

Cargo compartment:
Floor ..... 228-3/4 sq ft
Length ..... 30 ft, 6 in.
Width ..... 7 ft, 6 in.
Height ..... 6 ft, 6 in.
Volume ..... 1487 cu ft
Forward door:
Height ..... 5 ft, 6 in.
Width ..... 3 ft
Cargo ramp door:
Height ..... 6 ft, 6 in.
Width ..... 7 ft, 6 in.

PERSONNEL

Crew 4
Troops 33
or
Litters 24

WEIGHTS

	LB	L.F.
Empty	*/19,723	
Basic	*/19,772	
Design	33,000	3.00
Combat	*/23,886	
Max alternate gross wt	46,000	2.15
Normal takeoff	33,000	
Alternate takeoff	46,000	
Max landing	46,000	

*/ For basic mission.

FUEL AND OIL

Fuel:
Grade ..... JP-4 or JP-5
Spec MIL-T-5624
No. tanks:
Fuselage main. .(2) 620 gal
566 gal (crash resistant)
Fuselage aux... (4) 520 gal
480 gal (crash resistant)
Qty ..... 1141 gal
Oil:
Engine contained oil supply
Spec
Temps above 25° F MIL-L-23699
Temps below 25° F MIL-L-7808
Qty ..... 7 gal

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1520-00-871-7308
Lin/K30499

UNIT PRICE: Refer to Table 4-1, Page 4-1.

1-27. Loading and Performance — Typical Mission, CH-47C (Chinook).

CONDITIONS	BASIC MISSION I	BASIC MISSION (DESIGN GW) II	PRIMARY MISSION III	EXTERNAL PAYLOAD MISSION IV[1]	MAXIMUM FERRY MISSION V
Gross weight . . . . . (lb)	39,200[2]	33,000	46,000	46,000	46,000
Payload guaranteed (outbound) . . . . . (lb)	12,000	-	-	-	-
Payload guaranteed (inbound) . . . . . (lb)	6,000	-	-	-	-
Payload estimated (outbound) . . . . . (lb)	13,300	7,350	19,750	23,300	-
Payload estimated (inbound) . . . . . (lb)	6,650	3,675	9,875	0	-
V_{max} at SL/STD, military power . . . . . (kn)	156[4]	164[3]	123[4]	100[5]	123[4]
Max cruise speed at SL/STD normal power					
Guaranteed . . . . . (kn)	-	155	-	-	-
Estimated . . . . . (kn)	156[4]	164[3]	123[4]	100[5]	123[4]
V-Cruise (best range) at SL/STD . . . . . (kn)	141	140	123[4]	100[5]	123[4]
V-Cruise (best range) at 5000 ft/STD . . . . . (kn)	136	138	111[4]	100[5]	111[4]
Rate-of-climb at SL/STD military power . . . . . (ft/min)	2,045[3]	2,880[3]	1,380[3]	1,260[3]	1,380[3]
Vertical rate-of-climb at SL/STD maximum power . . . . . (ft/min)	1,220[3]	2,585[3]	-	-	-
Service ceiling at normal power . . . . . (ft)	10,200[4]	15,000[6]	8,000[4]	8,000[4]	8,000[4]
Service ceiling, STD temp, single engine at military power					
Guaranteed . . . . . (ft)	4,000	-	-	-	-
Estimated . . . . . (ft)	4,500[7] [8]	9,550[7]	-	-	-
Hover ceiling, OGE at STD temperature, max power . . . . . (ft)	9,600	14,750	-	-	-
Hover ceiling IGE at STD temperature, maximum power, 10 ft. wheel height	12,750	15,000	7,600	7,600	7,600
Radius of action,					
Guaranteed . . . . . (nmi)	100	-	-	-	-
Estimated . . . . . (nmi)	100	100	100	20	-
Ferry range . . . . . (nmi)	-	-	-	-	1,226

1-27. Loading and Performance — Typical Mission, CH-47C (Chinook) (Con't).

NOTES:

1/ With External Payload Equivalent to 26 FT^2 Drag Area (Troop Seats Incl.)
2/ Hover Gross Weight at 6000 ft/95°F at 245 RPM.
3/ Transmission Limit.
4/ Structural Envelope.
5/ Mission Cruise Speed (Outbound).
6/ Current Hydraulic System Limit.
7/ At 230 RPM.
8/ With 12000 LB Payload.

For Mission I the helicopter shall be capable of hovering at 6000 ft for 10 minutes at 95°F, OGE at gross weight required for accomplishment of Mission I (guaranteed). The Mission I gross weight includes an outbound payload of 12,000 lb., return payload of 6000 lb., and fuel for a radius of 100 nmi.

During Mission III the helicopter shall be capable of hovering out-of-ground effect at SL/STD, maximum power, and a gross weight of 43,000 pounds (guaranteed).

1-28. Performance Notes, CH-47C (Chinook).

FORMULA: RADIUS MISSIONS I & II

Warm up, take off, climb on course to 5000 feet at normal power, cruise out at long range speeds to remote base, land, and unload cargo. Without refueling, warm up, take off, climb on course to 5000 feet at normal power, and return at long range speeds. Range-free allowances are 2 minutes of normal power for each warmup and takeoff, plus 10 percent of initial fuel for reserve.

FORMULA: RADIUS MISSION III

Warm up, take off, cruise out at long range speeds at sea level to remote base, land, and unload outbound cargo, load inbound cargo. Without refueling, warm up, take off, return at long range speeds at sea level, land and unload cargo. Range-free allowances are 2 minutes of normal power for each warmup and takeoff, plus 10 percent of initial fuel for reserve.

FORMULA: RADIUS MISSION IV

Warm up, take off, cruise out at 100 knots at sea level with external cargo to remote base, detach cargo, and land. Without refueling, warm up, take off, and return at long range speeds at sea level. Range-free allowances are 2 minutes of normal power for each warmup and takeoff, plus 10 minutes of cruise fuel for reserve.

FORMULA: RANGE MISSIONS I & II

Warm up, take off, climb on course to 5000 feet at normal power, cruise out at long range speeds until 90 percent of initial fuel is consumed, land, and unload cargo. Range-free allowances are 2 minutes of normal power for warmup and takeoff, plus 10 percent of initial fuel for reserve.

FORMULA: RANGE MISSION III

Warm up, take off, cruise out at long range speeds at sea level until 90 percent of initial fuel is consumed, land, and unload cargo. Range-free allowances are 2 minutes of normal power for warmup and takeoff, plus 10 percent of initial fuel for reserve.

FORMULA: RANGE MISSION IV

Warm up, take off, cruise out at 100 knots at sea level with external cargo until 10 minutes of cruise fuel remains, detach cargo, and land. Range-free allowances are 2 minutes of normal power for warmup and takeoff, plus 10 minutes of cruise fuel for reserve.

FORMULA: RANGE MISSION V

Warm up, take off, climb on course to optimum cruise altitude at cruise speed, and cruise out at long range speeds until 90 percent of initial fuel is consumed. Range-free allowances are 2 minutes of normal power for warmup and takeoff, plus 10 percent of initial fuel for reserve.

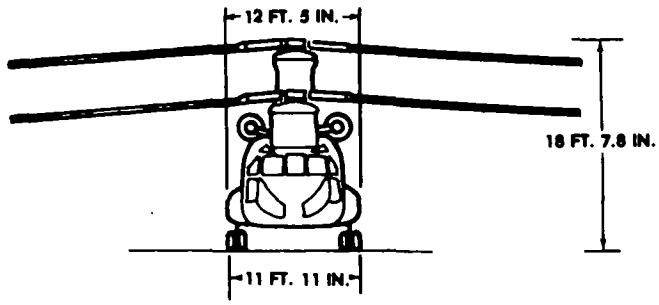
PERFORMANCE REFERENCES

Vertol Report 114-PJ-7003, Detail Specification for The CH-47C Helicopter.

Lycoming Report 124.38,T55-L-11A Engine Specification.

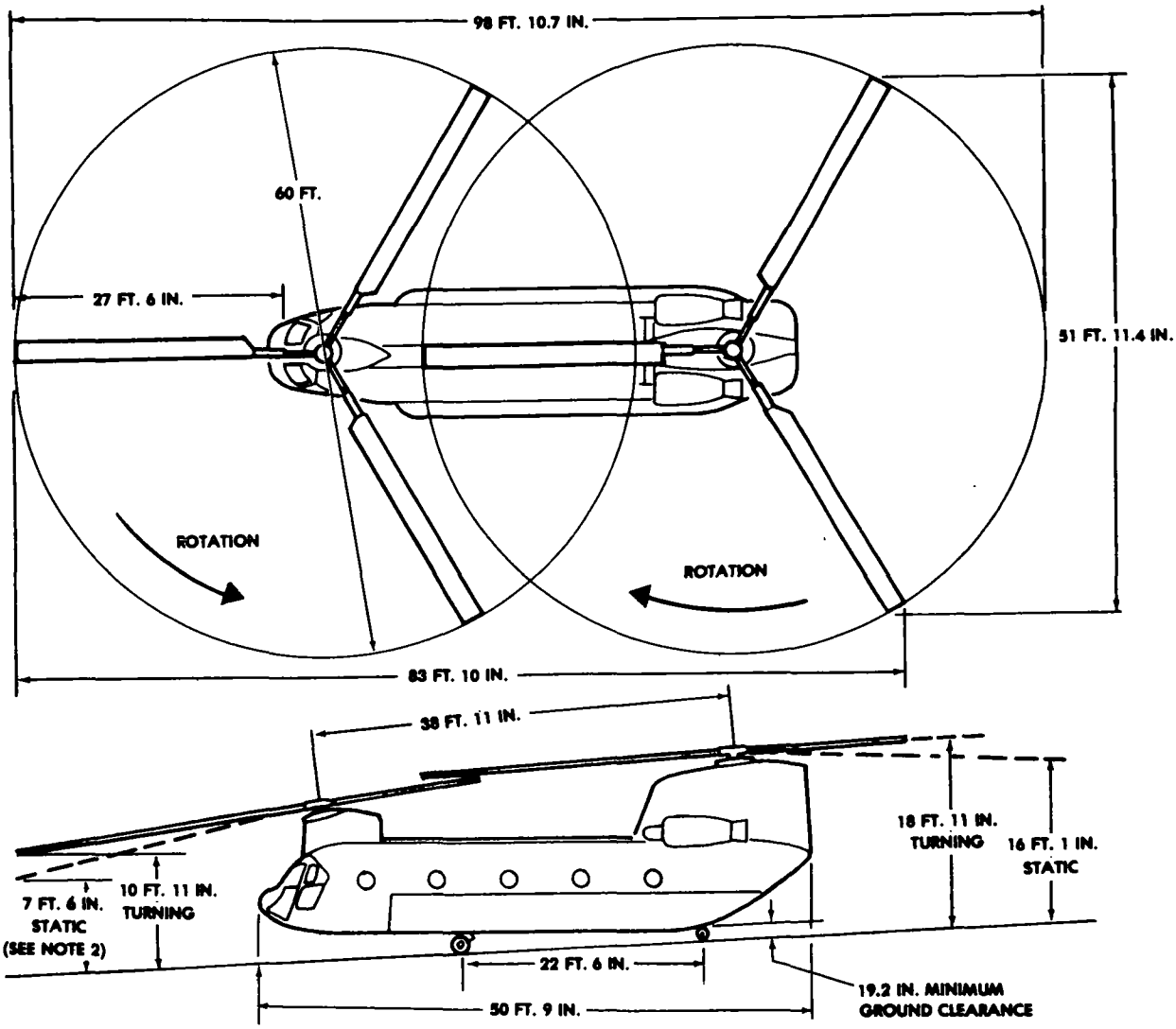
Boeing-Vertol Report 114-AD-601, Estimated Performance Capabilities of CH-47B and CH-47C Helicopters.

Source: TSARCOM-DRSTS-WC



DIMENSIONS

Rotor dia	60 Ft.
Length:	
Rotors operating	98 Ft. 10.7 In.
Rotors folded	50 Ft. 9 In.
Fuselage	50 Ft. 9 In.
Hight (overall)	18 Ft 7.8 In.
Tread	11 Ft. 11 In.
Rotor ground clearance:	
Static fwd	7 Ft. 6 In.
Idling fwd	10 Ft. 10 In.



NOTE:

1. THE ABOVE DIMENSIONS ARE BASED ON THE CYCLIC STICK AND DIRECTIONAL PEDALS BEING CENTERED AND THE THRUST CONTROL IN GROUND DETENT.
2. WITH THE FLIGHT CONTROLS OUT OF NEUTRAL, IT IS POSSIBLE FOR THE GROUND TO FORWARD ROTOR BLADE CLEARANCE TO BE 4 FEET 4 INCHES.
3. ALL DIMENSIONS ARE APPROXIMATE.
4. BLADE CHORD IS 32 INCHES.

Figure 1-12. Principal Dimensions, CH-47D (Chinook)

1-29. CH-47D (Chinook) Characteristics.

ENGINE

No. and Model ..... (2)T55-L-712
Mfg ..... Lycoming
Engine Spec. No 124.53
Type ..... Turboshaft
Reduction Great Ratio..... 66.96
Tail Pipe .....
Augmentation .....

ENGINE RATINGS

SEA LEVEL STD	SHP	RPM	MIN
Emergency	4500	15066	30
Maximum	3750	15066	10
Intermediate	3750	15066	30
Maximum Continuous	3000	15066	—

TECHNICAL PUBLICATIONS

AIRFRAME:
TM 55-1520-240-10 and CL
TM 55-1520-240-23
TM 55-1520-240-23P
TM 55-1520-240-MTF
TM 55-1520-240-PM
TM 55-1520-240-PMS
DMWR 55-1520-241

ENGINE:
TM 55-2840-234-23
TM 55-2840-234-23P
DMWR 55-2840-254

APU:
TM 55-2835-205-23
TM 55-2835-205-23P

MISSION AND DESCRIPTION

The principal mission of the CH-47D is to provide air transportation for troops and cargo. The helicopter can lift 15,000 lbs. of external cargo at 4,000; 95°F, Hoge with a 200 Fpm VROC and transport the load 30 NM.

The CH-47 is a medium lift tandem rotor helicopter powered by 2 turbo shaft engines. The helicopter has a 30 ft long cargo compartment with straight-in rear loading with accomodations for 24 litters and 2 attendants or 33 combat equipped troops and troop commander. The helicopter is designed for operations in temperatures ranging from -65° to +125°F. The YCH-47D has 3 cargo hooks for transportation of loads externally. The center hook has a capacity of 26,000 lbs., 17,000 lbs. for each forward or aft hook and 25,000 lbs. for a single load suspended from the forward and aft hooks. The multi-point (tandem) rigging of external loads improves load stability and increases the allowable cruise speed.

DEVELOPMENT

Date of Contact ..... 4 Jun 76
First acft delivered..... 31 Mar 82

FEATURES

Cargo Compartment:
Length 30 ft 2 in
Width 7 ft 6 in
Height 6 ft 6 in
Forward Door:
Height 5 ft 6 in
Width 3 ft 0 in
Cargo Ramp Door:
Height 6 ft 6 in
Width 7 ft 7 in
APU:
Solar T-62T-2B
Operations:
Day, night, VMC, IMC

PERSONNEL

Crew 3
Litters 24
(Plus 2 attendants)
or
Troops 33
(Plus troop commander)

WEIGHTS

LOADING	LB.
Empty	23,093
Basic	—
Design	33000
Combat	
Clean	—
Light Scout	—
Heavy Scout	—
Hog	—
Max. Takeoff	50000
Max. Landing	50000

FUEL AND OIL

Fuel:
Grade JP-4
Spec..... MIL-T-5624
No. tanks 6
Location..... Fuselage
Qty.....1034 Gal
Oil: (Engine)
Spec ... MIL-L-23699/7808
No. tanks..... 1/Eng
Location ..... Internal
Qty ..... 3.75 Gal ea

AVIONICS/ARMAMENT

Refer to Chapter 2.

UNIT PRICE/NSN

NSN 1520-01-088-3669
UNIT PRICE: Refer to Table 4-1.

1-30. Loading and Performance — Typical Missions, CH-47D (Chinook).

CONDITIONS	MISSION I (ROC)	MISSION II2/	MISSION III3/	MISSION IV4/	FERRY MISSION V5/	MISSION VI6/	DES GW (33000 LB
Estimated Mission Maximum gross weight (GW) ..... (lb)	42900	50000	44000	42440	50000	49991	—
Payload guaranteed (outbound external) ..... (lb)	15000	—	13000	—	—	—	—
Payload guaranteed (inbound external) ..... (lb)	—	—	—	—	—	23854	—
Payload estimated (outbound)..... (lb)	15800	22630	14300	15300	—	—	—
Payload estimated (inbound) ..... (lb)	—	—	7150	—	—	—	—
V max at SL/STD, Intermediate power..... (kn)	—	—	—	—	—	—	167
Max cruise speed at SL/STD, Maximum continuous power,							
Guaranteed..... (kn)	—	—	—	—	—	—	155
Actual ..... (kn)	—	—	—	—	—	—	158
Ave V-Cruise (outbound) ..... (kn)	101	126	121	97	138	136	—
Ave V-Cruise (inbound) ..... (kn)	140	135	140	140	—	122	—
Max rate-of-climb at Mission Max GW (Intermediate power)..... (ft/min)	798	1487	668	843	1470	1431	3750 (SL)
Vertical rate-of-climb at Mission Max GW, Take off horsepower..... (ft/min)	200	890	0	200	970	1065	4200
Service ceiling at maximum continuous power ..... (ft)							(SL)
Service ceiling, single engine at emergency power							15000
Guaranteed..... (ft)	—	—	—	—	—	—	10000
Actual ..... (ft)	—	—	—	—	—	—	13100
Hover ceiling, OGE at STD temperature							
Take off horsepower ..... (ft)	—	—	—	—	—	—	15000
Hover ceiling, IGE at STD temperature							
Take off horsepower, 10 ft wheel height..... (ft)	—	—	—	—	—	—	15000
Radius of action							
Guaranteed ..... (nmi)	30	—	—	—	—	—	—
Estimates..... (nmi)	30	30	100	30	—	—	—
Ferry range ..... (nmi)	—	—	—	—	1090	20	—

1-30. Loading and Performance — Typical Missions, CH-47D (Chinook) (Con't).

NOTES:

1/ Ambient Conditions: 4000 ft/95°F. External load provides a drag area of 50 sq ft and download of 0.8% GW. This is a Required Operational Capability (ROC) Mission.

2/ Ambient Conditions: SL/STD. External load provides a drag area of 50 sq ft and download of 0.8% GW.

3/ Ambient Conditions: 4000 ft/95°F.

4/ Ambient Conditions: 4000 ft/95°F. External load provides a drag area of 75 sq ft and download of 1.87% GW.

5/ Ambient Conditions: Standard atmosphere. Additional ferry fuel is carried in 5 internally mounted auxiliary 600 gal tanks.

6/ Self Retrieval. Ambient Conditions: SL/STD. Retrieval weight is 23,854 lbs. External load provides a drag area of 700 sq ft and download of 5.0% GW.

Reference: Boeing Vertol Report 145-PJ-8103-1, Prime Item Development Specifications for the Model CH-47D Helicopter.

1-31. Performance Notes, YCH-47D (Chinook).

Formula Radius Mission I, II and IV — Warm up, take-off, hover, acquire external load, climb vertically at maximum power and cruise outbound at long range speed to drop zone. Hover at drop zone to unload cargo and cruise inbound at long range speed. Range free allowances are 2 minutes of maximum continuous power for warm up and take-off, 2 minutes total hover-out-of-ground-effect, 1 minute vertical climb (200 fpm) and 30 minutes reserve at long range cruise speed. This is the Required Operational Capability (ROC) mission profile.

Formula: Radius Mission III — Load cargo internally, warm up, take-off, hover-out-of-ground-effect and cruise outbound to landing zone at long range speed. Land and exchange cargo (inbound load equals 1/2 outbound load), warm up, take-off, hover-out-of-ground effect and cruise inbound at long range speed. Range free allowances are 2 minutes of maximum continuous power for each warm up, take-off and hover plus 30 minutes reserve at long range cruise speed.

Formula: Ferry Mission V — Warm up and take-off at sea level and cruise climb to 8000 ft. Cruise at 8000 ft at long range speed to landing zone. Range free allowances are warm up and take-off, 2 minutes at maximum continuous power and a reserve of 10% of initial fuel.

Formula: Self Retrieval Mission VI — Warm up, take-off, climb vertically for 1 minute and cruise outbound with no load. Hover OGE for 1 minute at pickup zone, pickup load, climb vertically for 1 minute at 200 fpm, cruise inbound with load, hover OGE for 1 minute, deposit load and land with 15 minutes fuel reserve at 99% best range airspeed. Sortie radius is 20 NM.

Source: AVRADCOM-DRCPM-CH47M-T

Figure 1-13. CH-54A and B (Tarhe), Typical
(minor differences apparent between A and B models)

DIMENSIONS

Main rotor dia	72 Ft.
Length (rotors operating)	88 Ft. 5 In.
Length (fuselage)	70 Ft. 3 In.
Height (static)	25 Ft. 5 In.
Width (cockpit)	7 Ft. 1 In.
Tread	19 Ft. 9 In.
Gnd clearance:	
Main rotor (idling)	16 Ft. 8 In.
Tail rotor	9' 4"

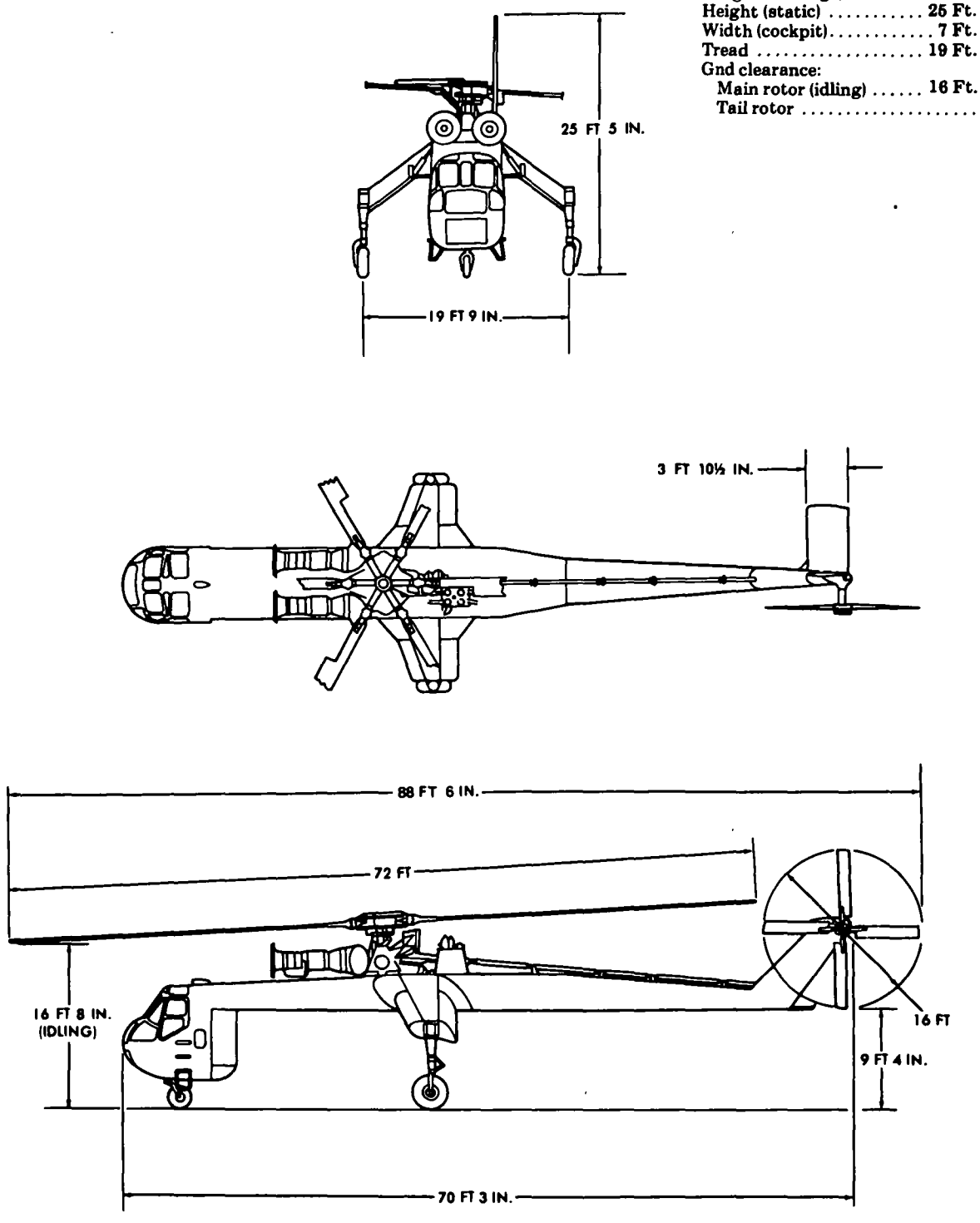


Figure 1-14. Principal Dimensions, CH-54A (Tarhe)

1-32. CH-54A (Tarhe) Characteristics.

ENGINE

No. & model . . . . (2) T73-P-1
Mfr . . . . . Pratt & Whitney
Spec 2453
Type . . . . . Axial
Weight . . . . . 925 lb

ENGINE RATINGS

T73-P-1

	SHP	RPM	MIN
Military	4500	9000	30
Normal rated	4000	9000	Cont.

TECHNICAL PUBLICATION

AIRFRAME:
TM 55-1520-217-MTF-1
TM 55-1520-217-L
TM 55-1520-217-S
TM 55-1520-217-CL-1
TM 55-1520-217-10-1
TM 55-520-217-23-1
TM 55-1520-217-23P
TM 55-1520-217-PMS
TM 55-1520-217-PMS-1

ENGINE:
TM 55-2840-230-23
TM 55-2840-230-23P
TM 55-2840-230-24

AUXILIARY POWER UNIT:
TM 55-2835-203-24
TM 55-2835-203-23P
DMWR 55-2835-100

MISSION AND DESCRIPTION

Mfr's Model: Sikorsky S-64E

Missions that may be accomplished with the CH-54A helicopter include: movement of heavy outsized loads, towing of surface vehicles, recovery of downed aircraft, and by use of detachable pods, transportation of personnel, vehicles, and equipment (including Paratroop Operations). Since cargo is carried externally by a hoist, the ground crew may load or unload cargo while the helicopter hovers overhead, thereby extending the operational capability into areas unsuitable for landing. Flattopped fuselage serves as a work platform for servicing engines, rotor systems, and main components.

This helicopter is of the all-metal, single main rotor type with one anti-torque tail rotor. The two gas turbine engines are located above the fuselage. The wheel-type alighting gear consists of two fixed main gear assemblies and a fixed nose gear assembly. The enclosed cockpit forming the nose of the helicopter carries basic accommodations for pilot, copilot, and an aft facing pilot. Conventional helicopter flight controls are provided for forward facing pilot seats. Automatic stabilization equipment is also provided. The aft facing pilot seat has cyclic and directional trim controls and a conventional collective pitch stick. Cargo handling provisions include a hydraulic powered hoist. Space and structural provisions are also made for a cargo sling or towing assembly.

DEVELOPMENT

First production acft delivered . . . . . Nov 66
Production status . . . . . out of production

FEATURES

Six-blade main rotor.
Rear facing seat for aft pilot/hoist operator
A four-point 20,000 lb capacity load suspension system and a 20,000 lb capacity single point cargo hoist.
Four-blade, anti-torque tail rotor.

PERSONNEL

Crew (normal) 3
Pilot 1
Copilot 1
Aft pilot 1
Observers 2
Passengers (with Pod Attached)
Troops 45
or
Litters 24
and
Attendants 3

WEIGHTS

	LB	L.F.
Empty	19,219	
Basic	21,361	
Gross		
(design)	38,000	2.50
(alternate)	42,000	2.26

FUEL AND OIL

Fuel:
Grade . . . . . JP-4 or -5
Spec MIL-T-5624
Qty . . . . . 1342 (8723 lb. JP-4)

Oil:
Spec MIL-L-23699
Qty . . . . . 1.73 gal

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

CH-54A, NSN 1520-00-964-9601
Line K30515,

UNIT PRICE: Refer to Table 4-1

1-33. Loading and Performance — Typical Mission, CH-54A (Tarhe).

CONDITIONS		20 MILE RADIUS MISSION I	FULL FUEL RADIUS MISSION II	FERRY MISSION III
TAKEOFF WEIGHT 4/	(lb) ...	42,000	42,000	30,084
Fuel	(lb) ...	2,790	8,723	8,723
Payload (outbound) 3/	(lb) ...	17,849	11,916	–
Payload (inbound) 3/	(lb) ...	19,289	5,958	–
Takeoff power loading	(lb/bhp) ...	6.36	6.36	4.59
Disc Loading	(lb/sq ft)..	10.31	10.31	7.44
Max rate of climb at SL 1/	(fpm)...	1,350	1,350	2,625
Max rate of climb (one engine out) 1/	(fpm)...	450	450	1,525
Service ceiling (100 fpm) 2/	(ft)...	8,000	8,000	–
Service ceiling (one engine out) 1/	(ft)...	2,000	2,000	12,000
RANGE	(nmi)...	–	–	239
Average cruising speed	(kn)...	–	–	110
Mission time	(hrs)...	–	–	2.4
RADIUS	(nmi)...	20	110	–
Average cruising speed	(kn)...	98	100	–
Mission time	(hrs)...	0.5	2.0	–
LANDING WEIGHT	(lb)...	21,615	22,233	22,233

1/ Maximum power.
2/ Normal power.
3/ Carried by single point hoist or four point load suspension system.
4/ Includes crew of 3 at 200 lb each. Does not include baggage. Engine Air Particle Separators (EAPS) at 360 lbs or Passive Defense (Armor) Protection at 1185 lbs.

Performance Basis:
Data Source: Army CH-54A Model Spec No. SER64509-2.
TM 55-1520-217-10/1 Operator's Manual (CH-54A)

Performance is based on powers shown in paragraph 1-32.

FORMULA: MISSION I (20 mile radius, single point load)

Warm up for 2 minutes, takeoff at sea level, standard day conditions and climb at BROC. Cruise out 20 nautical miles at 2000 ft pressure altitude, standard day conditions, to a sea level standard day remote site. Hover for 5 minutes out of ground effect while delivering and picking up cargo. Climb at BROC and cruise back at 2000 ft pressure altitude, standard day conditions, to a sea level standard day home base. Hover for 1 minute out of ground effect and deposit cargo. Land with 10% initial fuel reserve.

FORMULA: MISSION II (full fuel radius, four point load)

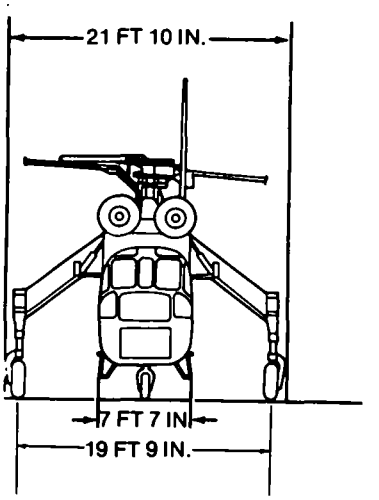
Warm up for 2 minutes, takeoff at sea level, standard day conditions with full fuel load. Cruise out as far as possible to a sea level, standard day remote site. Land, idle for 5 minutes, deliver & pickup cargo. Takeoff, cruise back to sea level standard day home base. Deposit cargo. Land with 10% initial fuel reserve. Return load equals one half outbound load.

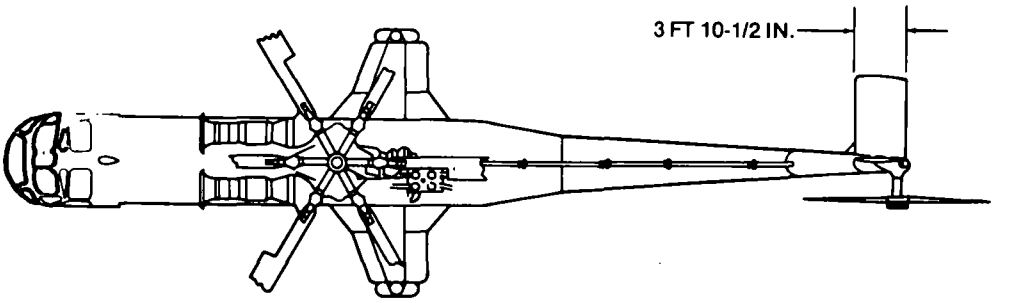
FORMULA: MISSION III (Ferry)

Warm up 1 minute, takeoff at sea level standard day conditions and cruise out at best range speed until only reserve fuel remains. Land with 10% initial fuel reserve.

Source: TSARCOM-DRSTS-WC

DIMENSIONS	
Main rotor dia.	72 Ft. 3 In.
Length:	
Rotors operating	88 Ft. 6 In.
Fuselage	70 Ft. 3 In.
Height (static)	25 Ft. 4 In.
Width (cockpit)	7 Ft. 1 In.
Tread	21 Ft. 10 In.
Gnd clearance:	
Main rotor (idling)	15 Ft. 8 In.
Tail rotor	9 Ft. 4 In.





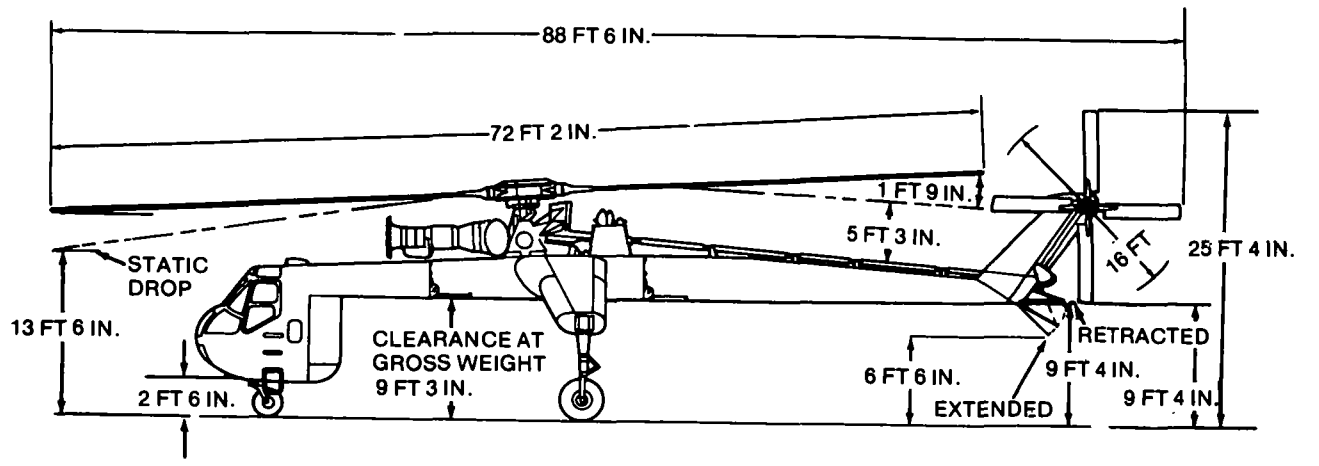


Figure 1-15. Principal Dimensions, CH-54B (Tarhe)

1-34. CH-54B (Tarhe) Characteristics.

ENGINE

No. & model ..... (2)T73-P-700
Mfr ..... Pratt & Whitney
Spec 2456
Type ..... Axial
Weight ..... 935 lbs

ENGINE RATINGS

	SHP	RPM	MIN
Military	4800	9000	30
Normal rated	4430	9000	Cont.

TECHNICAL PUBLICATION

AIRFRAME:
TM 55-1520-217-MTF
TM 55-1520-217-MTF-2
TM 55-1520-217-L
TM 55-1520-217-S
TM 55-1520-217-CL-2
TM 55-1520-217-10-2
TM 55-520-217-23-2
TM 55-1520-217-23P
TM 55-1520-217-PMS
TM 55-1520-217-PMS-2

ENGINE:
TM 55-2840-230-23
TM 55-2840-230-23P
TM 55-2840-230-24

AUXILIARY POWER UNIT:
TM 55-2835-203-24
TM 55-2835-203-23P
DMWR 55-2835-100

MISSION AND DESCRIPTION

Mfr's Model: Sikorsky S-64F

Missions that may be accomplished with the CH-54B helicopter include: movement of heavy outside loads, towing of surface vehicles, recovery of downed aircraft, and by use of detachable pods, transportation of personnel, vehicles, and equipment (including paratroop operations). Since cargo is carried externally by a hoist, the ground crew may load or unload cargo while the helicopter hovers overhead, thereby extending operational capability into areas unsuitable for landing. The flat top of the fuselage serves as a work platform for maintenance and servicing of the engines, rotor systems and other components of the power train system.

The CH-54B is an all-metal single, main rotor type helicopter with one anti-torque tail rotor. It is powered by two gas turbine engines located above the fuselage. The wheel type landing gear consists of two fixed main gear assemblies and single fixed, fully swiveling nose gear assembly. The fuselage and landing gear are constructed and assembled in a crane configuration. The enclosed cockpit forming the nose of the aircraft has basic accommodations for pilot, co-pilot, aft-facing pilot and two observers. Conventional helicopter flight controls are provided for the pilot and co-pilot. The aft-facing pilot has electrically operated cyclic and directional trim controls and a conventional collective pitch control. An automatic flight control system (AFCS) is also provided. Cargo handling capabilities consist of a removable single point hydraulic powered four point load suspension system. Provisions are also made for installation of a towing kit.

DEVELOPMENT

First flight ..... June 1969
First production aircraft delivered ..... Dec 1969
Production status ..... Out of production

FEATURES

Six-blade main rotor.
Aft-facing pilot/hoist operator.
25,000 lb. capacity four point load suspension system.
25,000 lb. capacity single point hoist.
Four-blade anti-torque tail rotor.

PERSONNEL

Crew (normal)	3
Pilot	1
Co-pilot	1
Aft-pilot	1
Observers	2
Passengers (with pod attached)	
Troops	45
Litters	24
Attendants	3

WEIGHTS

	LB	L.F.
Empty	19,864	
Basic	22,386	
Gross (Design)	47,000	2.0

FUEL AND OIL (USABLE)

Fuel:
Grade ..... JP-4 or -5
Spec MIL-T-5624
Qty ..... 1342 (8723 lb. JP-4)

Oil:
Spec MIL-L-23699
Qty ..... 1.73 gal

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

CH-54B, NSN 1520-00-113-5776
Line K30515,
UNIT PRICE: Refer to Table 4-1.

DO NOT

1-35. Loading and Performance — Typical Mission, CH-54B (Tarhe).

		20 MILE RADIUS MISSION I	FULL FUEL RADIUS MISSION II	FERRY MISSION III
TAKEOFF WEIGHT 5/	(lb)	47,000	47,000	31,109
Fuel	(lb)	2,906	8,723	8,723
Payload (outbound) 3/	(lb)	21,708	15,891	–
Payload (inbound) 3/	(lb)	23,220	7,946	–
Takeoff power loading	(lb/bhp)	5.95	5.95	3.79
Disc Loading	(lb/sq ft)	11.50	11.50	7.36
Max rate of climb at SL 1/	(fpm)	1,350	1,350	2,915
Max rate of climb (one engine out) 1/	(fpm)	490	490	1,890
Service ceiling (100 fpm) 2/	(ft)	10,000	10,000	–
Service ceiling (one eninge out) 1/	(ft)	2,000	2,000	12,000
RANGE 4/	(nmi)	–	–	226
Average cruising speed	(kn)	–	–	100
Mission time	(hrs)	–	–	2.3
RADIUS 4/	(nmi)	20	101	–
Average cruising speed	(kn)	103	100	–
Mission time	(hrs)	0.5	2.0	–
LANDING WEIGHT	(lb)	22,650	21,514	23,258

1/ Maximum power.
2/ Normal power.
3/ Carried by single point hoist or four point load suspension system.
4/ Detailed descriptions of missions are given in paragraph 1-33.
5/ Includes crew of 3 at 200 lb each. Does not include baggage, Engine Air Particle Separators (EAPS) at 360 lbs or Passive Defense (Armor) Protection at 1285 lbs.

Performance Basis:
Data Source: Army CH-54B Model Spec No. SER64279.
TM 55-1520-217-10/2 Operator's Manual (CH-54B)

Performance is based on powers shown in paragraph 1-34.

Source: TSARCOM-DRSTS-WC

DO

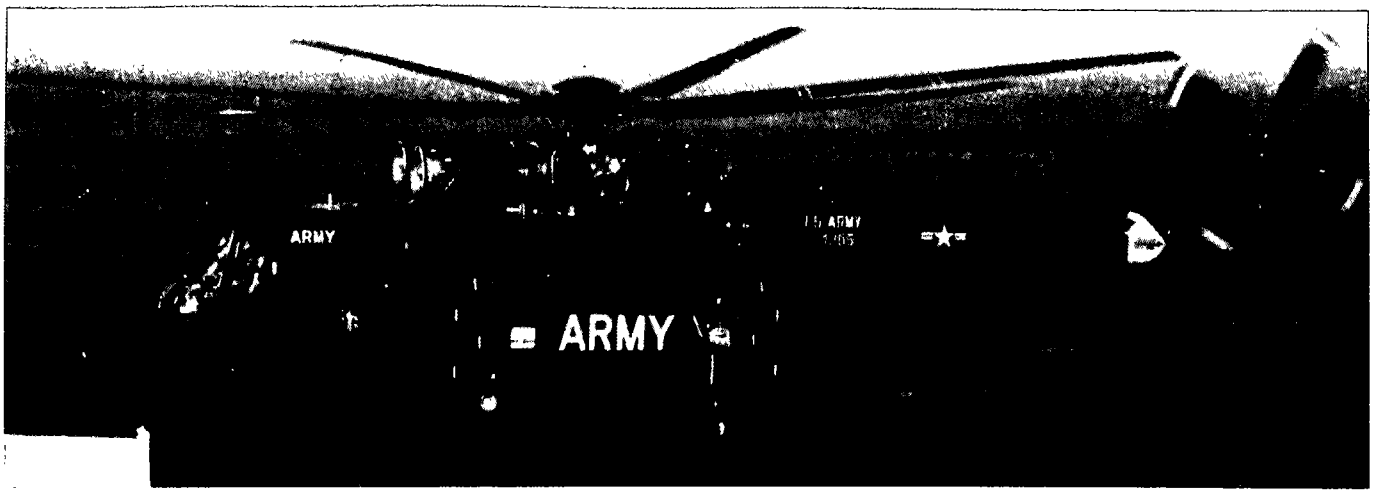
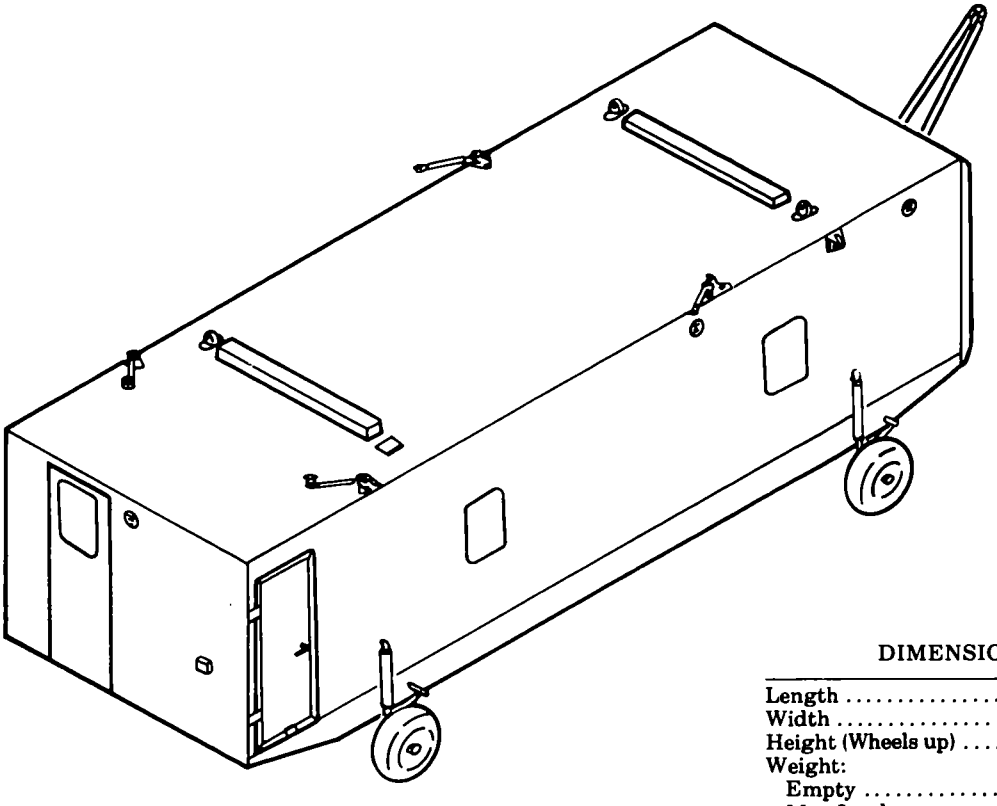


Figure 1-16. CH-54A and B (Tarhe), Typical, with Universal Military Pod



DIMENSIONS

Length	28 Ft. 1 In.
Width	9 Ft. 6 In.
Height (Wheels up)	7 Ft. 8 In.
Weight:	
Empty	3020 pounds
Max Load	20,000 pounds

Figure 1-17. Universal Military Pod

1-36. Universal Military Pod, CH-54A and B (Tarhe).

The universal military pod is a semimonocoque structure with a rear loading split door-ramp extending the full width and height of the pod. The split-door construction permits both sides to be opened independently, and reduces the probability of jamming. This arrangement permits easier exit in case of an emergency. Two forward doors, one on each side of the pod, are jettisonable and can be opened from both inside and outside. Each door has a secure locking device to prevent inadvertent opening in flight. Four windows, two on each side, are installed using a rubber push-out type seal and can be removed from both the inside and outside of the pod. A nonstructural panel with a push-out type window is in the forward bulk-head. The window is removable from inside the pod. Additional design features follow:

a. Floor loading is 334 pounds per square foot at any location. In the vehicular tread area the maximum allowable floor loading is 1500 lbs/sq. ft. The floor is reinforced to accommodate equipment as heavy as a 155 Howitzer. Cargo fittings are flush with the floor and have a load capacity of 5000 pounds each. The spacing of the fittings is a standard 20-inch grid pattern.

b. Pod is attached to helicopter load leveler system. Two rubber strips are attached to the top of the pod, running full width, to prevent chafing between the top of the pod and the bottom of the helicopter. When the pod carries troops (passengers) or litter patients, safety provisions require the insertion of screw actuated pins in the primary adapter fittings. This will prevent jettisoning of the load. The primary missions for the pod are to carry a maximum of 45 troops (passengers) or 24 litter patients and to transport general cargo such as missiles, vehicles, weapons, and general supplies.

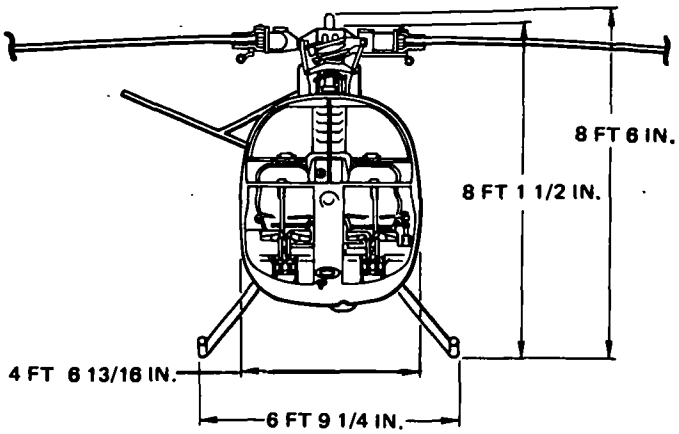
c. Pod has a conventional four wheel system with pneumatic tires and may be towed at speeds up to 5 miles per hour on level ground at the maximum gross weight of 20,000 pounds. Each of the four wheels has an independent retraction and extension system manually-operated by the mechanical jacks or alternate hydraulic pumps attached to each wheel gear. These permit the pod to be raised or lowered when fully loaded. This action aids unloading the pod by allowing the use of a fork lift and other cargo moving equipment. To obtain the maximum pod wheel ground clearance of 18 inches, when the pod is attached to the helicopter, full retraction of the pod wheels is possible. Detachment from the helicopter without using winches is made by extending the wheel mechanism.

d. Electrical power is supplied to pod by the helicopter's electrical system. When the pod is attached to the helicopter, two cables on the front exterior bulk-head of the pod are attached to the ac and dc receptacles on the left side external skin of the helicopter, marked POD PWR AC, DC, ICS. When the pod is not attached to the helicopter, electrical power is supplied from a ground source through cables to the ac and dc receptacles marked EXT POWER 115 VOLTS AC and EXT POWER 28 VOLTS DC, on the left side of the pod.

e. Lighting for the interior of the pod consists of twelve light assemblies, arranged in parallel lines of six lights each on the ceiling. The forward two lights near the entrance doors are white or red controlled by a switch marked ENTRANCE LIGHTS WHITE AND RED. The eight interior lights are controlled by a switch marked INTERIOR LIGHTS, ON-OFF. Both switches are on the master switch panel on the left forward wall of the pod. The last two lights at the ramp end of the pod are controlled by a switch at the rear on the left wall marked CARGO LOADING LIGHTS, ON-OFF. Communication between the pod and the helicopter is through a third cable, in the same area as the electrical power cables. The cable is attached to the ICS outlet on the helicopter and is routed to the interphone control panel for the pod, which is on the forward ceiling. Also in this area is a stowage rack for the 30-foot cable.

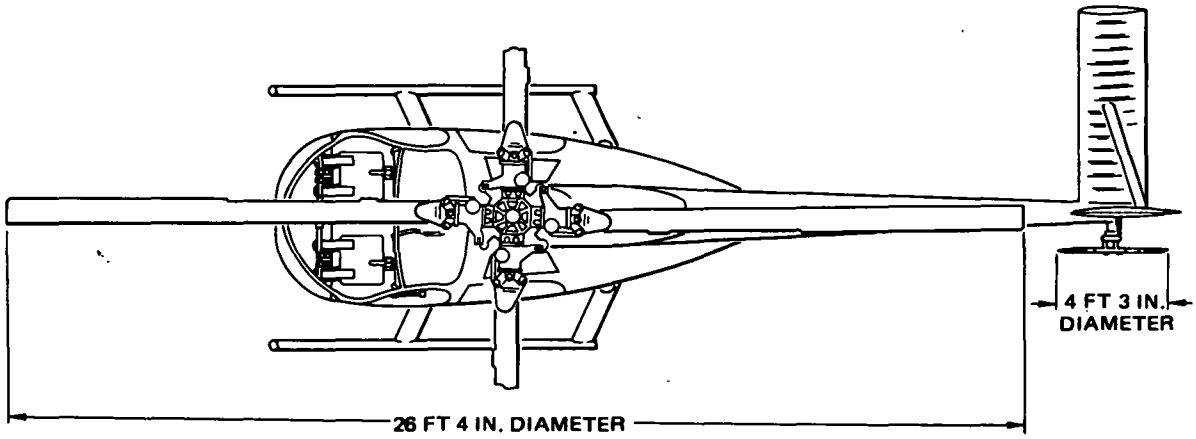
f. Electrically-operated ventilating blower with a capacity of 500 cfm is installed on the forward bulk head of the pod and is controlled by a switch marked VENT BLOWER, ON-OFF on the master switch panel. Two exhaust openings are on the right and left sides of the pod in the rear area.

Source: TSARCOM-DRSTS-WC



DIMENSIONS

Rotor dia	26 Ft. 4 In.
Length:	
Rotor operating	30 Ft. 3-3/4 In.
Rotor folded	22 Ft. 9-1/2 In.
Height	8 Ft. 6 In.
Tread	6 Ft. 9-1/4 In.



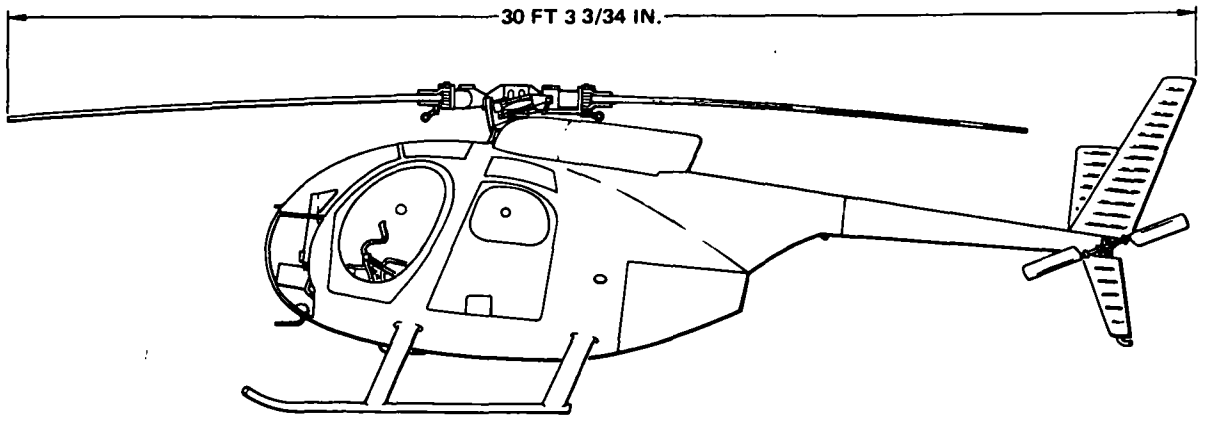


Figure 1-18. Principal Dimensions, OH-6A (Cayuse)

1-37. OH-6A (Cayuse) Characteristics.

ENGINE

No. & model . . (1) T63-A-5A/700
Mfr . . . . . Detroit Diesel Allison Div of GMC
Engine spec No.
T63-A-5A 580J, dtd 30 Sept 1970
T63-A-700 803F, dtd 30 Sept 1970 Amend 1.

ENGINE RATINGS

Ratings	Output SHP
Takeoff & mil	*317
Normal	**270

	Output speed rpm	SFC lb/SHP-HR
Takeoff & mil	6000	0.697
Normal	6000	0.706

Above ratings developed on standard sea level static conditions.
*Derated to 252.5 for 5 min
**Derated to 214.5

TECHNICAL PUBLICATIONS

AIRFRAME:
TM 55-1520-214-10
TM 55-1520-214-CL
TM 55-1520-214-MTF
TM 55-1520-214-PMS
TM 55-1520-214-ESC
TM 55-1520-214-23
TM 55-1520-214-23P
TM 55-1520-214-S
DMWR 55-1520-214

ENGINE:
TM 55-2840-231-24
TM 55-2840-231-23
TM 55-2840-231-23P

MISSION AND DESCRIPTION

MFR's Model: Hughes 500

The principal missions of the OH-6A light obeservation helicopter are visual observation and target acquisition, NOE flight, reconnaissance, and command control. This helicopter is employed in support of combat companies, and will operate for extended periods of time with only such support as provided by one mechanic with handtools. Normal operation is limited to day or night visual flight conditions.

The light observation helicopter is a single-lifting, 4-blade rotor, 4-place helicopter with a gross weight of 2550 lb or less. It is powered by a T63-A-5A/700 free turbine engine with 317 SHP, derated to 252.5 SHP. It incorporates dual flight controls with the secondary cyclic control element easily removable. The flight instruments are limited to those required for day and night marginal visual conditions. The cargo area contains troop-type seats which are easily stowable when not in use.

DEVELOPMENT

Design competition initiated	October 1960
Flight evaluation completed	June 1964
Production contract	May 1965
First production acft deliveries	September 1966

FEATURES

Dual controls.
Stowable troop seats.

PERSONNEL

Crew (normal)	1
Observer	2
Copilot	1

WEIGHTS

Empty	1158
Useful load	1242
Pilot	200
Observers (2), Copilot (1)	600
Cargo	42
Fuel	400
Gross (FAA certified)	2550
Max structure	2700

FUEL AND OIL

Fuel:
Grade JP-4
Spec MIL-T-5624
Alternate . . . JP-5, MIL-T-5624
Qty . . . . . 61.3 gal (non-crash resistant)
54.4 gal (crash resistant)

Oil:
Spec MIL-L-23699
Alternate . . . MIL-L-7808
No. tanks . . 1
Location . . . Engine section
Qty . . . . . 3 qt

Main Transmission:
Spec MIL-L-23699
Alternate . . . MIL-L-7808
Qty . . . . . 8.0 pt

Tail Rotor Transmission:
Spec MIL-L-23699
Alternate . . . MIL-L-7808
Qty . . . . . 0.5 pt

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1520-00-918-1523
Lin K30645

UNIT PRICE: Refer to Table 4-1.

1-38. Loading and Performance — Typical Mission, OH-6A (Cyuse).

	BASIC MISSION I	ALTERNATE 1A (CLEAN) II	ALTERNATE 1A (ARMED) III	FERRY RANGE IV	HIGH SPEED SEA LEVEL MISSION V
TAKEOFF WEIGHT (lb)	2159	2550	2550 6/	5/	2159
Fuel (lb)	400	400	400		400
Payload (not including pilot) (lb)	400	637 4/	400		400
Takeoff power loading (lb/bhp)	8.55	9.50	9.50		8.55
Disk loading (lb/sq ft)	3.96	4.41	4.41		3.96
Speed for Min. R/D (knots)	54.0	54.0	54.0		54.0
Max rate of climb at sea level 1/ (fpm)	1925	1560	1560		1925
Speed for max R/C, sea level 1/ (knots)	56.0	58.0	58.0		56.0
Time: Sea level to 5000 ft 1/ (minutes)	2.5	3.3	3.3		2.5
Time: Sea level to 10,000 ft 1/ (minutes)	5.3	7.0	7.0		5.3
Service ceiling (100 fpm) 2/ (ft)	18,400	15,850	15,850		18,400
Absolute hover ceiling 1/ (ft)	11,200	6,500	6,500		11,200
COMBAT RANGE (nmi)	370	330	316		294
Average cruising speed 7/ 8/ (knots)	104	102	100		130
Cruising altitude (ft)	12,200	9600	9500		SL
Total mission time (hr)	3.6	3.3	3.2		2.3
COMBAT RADIUS (nmi)	185	165	158		147
Average cruising speed 7/ 8/ (knots)	104	102	100		130
Cruising altitude (ft)	12,200	9600	9500		SL
Mission time (hr)	3.6	3.3	3.2		2.3
COMBAT WEIGHT 3/ (lb)	1961	2207	2208		1977
COMBAT ALTITUDE (ft)	12,200	9600	9500		SL
Combat speed 7/ (knots)	116	112	112		130
Combat climb 1/ (fpm)	1860	1680	1680		2220
Service ceiling 2/ (ft)	20,950	17,850	17,850		20,750
Absolute hover ceiling 1/ (ft)	14,400	10,500	10, 500		14,100
Max rate of climb @ sea level 1/ (fpm)	2250	1860	1860		2220
Speed for max R/C, sea level (knots)	55	56	56		55
Maximum speed 7/ 8/ (knots)	104	102	100		130
Basic speed at 5000 ft 7/ (knots)	117	113	110		
LIMIT FLIGHT LOAD FACTORS					
Maneuver Positive (g)	2.82	2.54	2.54		2.82
Maneuver Negative (g)	0.50	0.50	0.50		0.50

1/Takeoff power up to 5 minutes.
2/Normal power.
3/For RADIUS mission.
4/Includes copilot at 200 lbs.

1-38. Loading and Performance — Typical Mission, OH-6A (Cayuse) (CONT).

5/ See Para 1-35.
6/ Includes . M-27 or M-27E-1 Armament Kit.
7/ Limited by V_{ne}.
8/ At combat altitude and combat weight.

Performance Basis:

a. Army flight test YOH-6A.

b. All performance is out of ground effect and for standard atmospheric conditions. Speeds given are true airspeed.

1-39. Performance Notes, OH-6A (Cayuse).

FORMULA: RADIUS MISSION I, II, & III

Warm up, take off, climb on course at military power to altitude for best range at average cruise weight. Cruise to remote base at speed for best range. Do not land. Return to home base. Range-free allowances are 2 minutes of normal power for warmup and 10 percent of initial fuel for reserves.

FORMULA: RANGE MISSION I, II, & III

Warm up, take off, and climb on course at military power to altitude for best range at average cruise weight. Cruise to remote base at speed for best range. Range-free allowances are 2 minutes of normal power for warmup and 10 percent of initial fuel for reserve.

FORMULA: FERRY RANGE MISSION IV

Warm up, take off, and climb on course at military power to 5,000 feet. At steady cruise, climb to stay at optimum altitude as weight decreases. Range-free allowance is 2 minutes of normal power for warmup. No reserve fuel allowance.

FORMULA: RADIUS MISSION V

Warm up, take off, and accelerate to maximum speed. Cruise at sea level at maximum speed, as limited by normal power or V_{ne} to remote base. Do not land. Return to home base. Range-free allowances are 2 minutes of normal power for warmup and 10 percent of initial fuel for reserve.

FORMULA: RANGE MISSION V

Warm up, take off, and accelerate, to maximum speed. Cruise at sea level at maximum speed, as limited by normal rated power V_{ne} to remote base. Range-free allowances are 2 minutes of normal power for warmup and 10 percent of initial fuel for reserve.

GENERAL DATA

For detailed planning refer to applicable technical manual.

PERFORMANCE REFERENCE

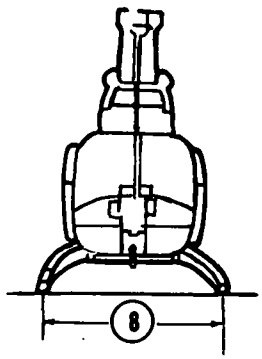
Hughes Tool Company-Standard Aircraft Characteristics (OH-6A).

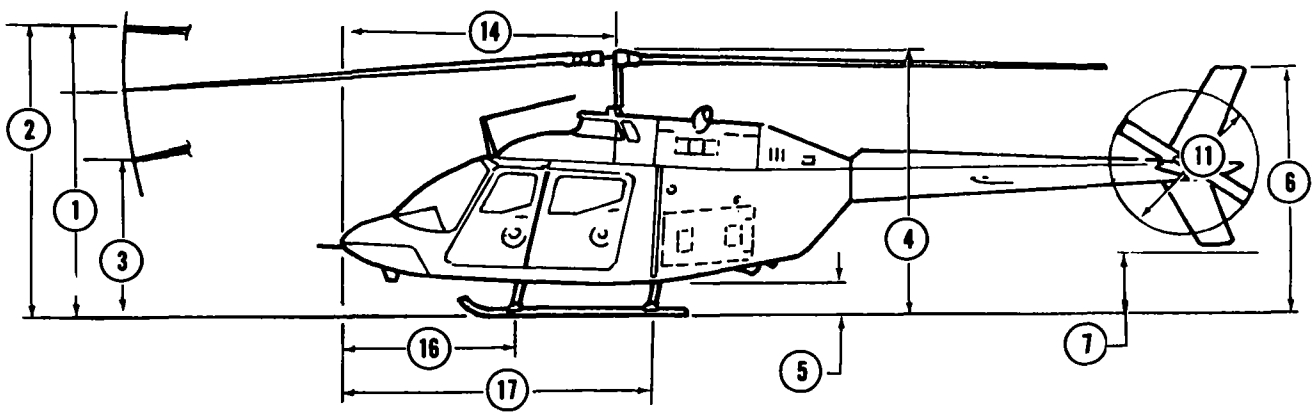
Figure 1-19. OH-6A (Cayuse)

Source: TSARCOM-DRSTS-WO

Figure 1-20. OH-58A and C Light Observation Helicopter (Kiowa), Typical

DIMENSIONS	
Rotor dia	35 Ft .4 In.
Length:	
Rotors operating	40 Ft. 11.8 In.
Blades removed	32 Ft. 2.0 In.
Height:	
To top of rotor	9 Ft. 7.0 In.
Tread of skids	6 Ft. 5.4 In.
Main rotor:	
Disk area	979.8 Sq. Ft.
Blade area	38.26 Sq. Ft.
Tail rotor:	
Disk area	20.97 Sq. Ft.
Blade area	2.26 Sq. Ft.





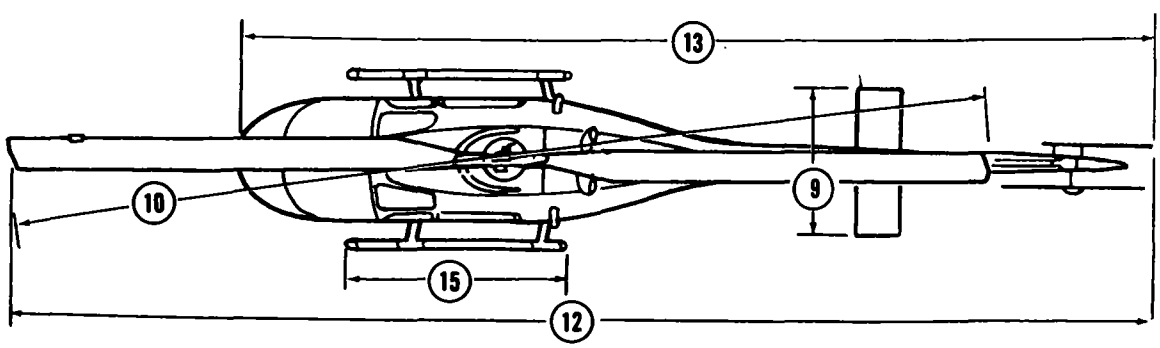


Figure 1-21. Principal Dimensions, OH-58A (Kiowa) (Sheet 1 of 2)

	HEIGHT	STANDARD SKID GEAR	HIGH SKID GEAR	FLOAT GEAR
1.	Forward Tip of Main Rotor (Static Position) to Ground with Droop	9 Ft. 6.0 In.	10 Ft. 0.0 In.	9 Ft. 7.9 In.
2.	Forward Tip of Main Rotor to Ground (Tie-down)	12 Ft. 0.0 In.	12 Ft. 6.0 In.	12 Ft. 1.9 In.
3.	Forward Tip of Main Rotor to Ground (Forward Down)	6 Ft. 8.0 In.	7 Ft. 2.0 In.	6 Ft. 10 In.
4.	Ground to Top of Main Rotor Reservoirs	9 Ft. 7.0 In.	10 Ft. 9.0 In.	10 Ft. 5.4 In.
5.	Bottom of Cabin*	13.0 In.	27.0 In.	28 In.
6.	Top of Vertical Stabilizer	8 Ft. 1.5 In.	10 Ft. 1.5 In.	11 Ft. 1.0 In.
7.	Tail Skid to Ground	1 Ft. 4.4 In.	3 Ft. 4.4 In.	4 Ft. 4.0 In.
	WIDTH			
8.	Skid Gear	6 Ft. 5.4 In.	7 Ft. 3.0 In.	11 Ft. 6.1 In.
9.	Horizontal Stabilizer	6 Ft. 3.2 In.	No Change	No Change
	DIAMETERS			
10.	Main Rotor	35 Ft. 4.0 In.	No Change	No Change
11.	Tail Rotor	5 Ft. 2.0 In.	No Change	No Change
	LENGTH			
12.	Overall (Main Rotor Fore and Aft) to Aft End of Tail Skid	40 Ft. 11.8 In.	No Change	No Change
13.	Nose of Cabin to Aft End of Tail Skid	32 Ft. 2.0 In.	No Change	No Change
14.	Nose of Cabin to Center Line of Main Rotor	8 Ft. 10.1 In.	No Change	No Change
15.	Skid Gear	8 Ft. 1.3 In.	10 Ft. 4.2 In.	19 Ft. 5.0 In.
16.	Nose of Cabin to Center Line of Forward Cross Tube	6 Ft. 0.0 In.	5 Ft. 9.4 In.	5 Ft. 11.7 In.
17.	Nose of Cabin to Center Line of Aft Cross Tube	10 Ft. 9.0 In.	10 Ft. 6.3 In.	10 Ft. 8.7 In.
18.	Pitot Tube	6.8 In.	No Change	No Change

*Check antennas that may protrude lower.

Figure 1-21. Principal Dimensions (Sheet 2 of 2)

1-40. OH-58A (Kiowa) Characteristics

ENGINE

No. & model .. (1) T63-A-700
Mfr ..... Allison Corp.
Engine spec. no. 803-F Amendment 1
Type ..... Axial-centrifugal compressor, free turbine
Length ..... 41 in.
Width ..... 15.5 in.
Height ..... 18 in.
Weight ..... 135 lbs.
Helicopter rotor gear ratio 17.44:1

ENGINE RATINGS

Standard Sea Level Static Conditions

	SHP	RPM	DUR
Takeoff	317	6000	5 min.
Normal	270	6000	Cont.*

*Derated for Transmission

TECHNICAL PUBLICATION

AIRFRAME:
TM 55-1500-338-S
TM 55-1520-228-10
TM 55-1520-228-23
TM 55-1520-228-23P
TM 55-1520-228-CL
TM 55-1520-228-L
TM 55-1520-228-MTF
TM 55-1520-228-PMD
TM 55-1520-228-PM
DMWR 55-1520-228

ENGINE:
TM 55-2840-231-23
TM 55-2840-231-23&P
DMWR 55-2840-231
DMWR 55-2840-109

MISSION AND DESCRIPTION

Mfg's Model: Bell 206A (MOD)

The missions for which the OH-58A Helicopter are employed are: visual observation, target acquisition, reconnaissance, and command control. The helicopter is readily adaptable to utility tasks at the combat company level without use of special kits or special attachments. The helicopter is organic to division, brigade, battalion, or equivalent level, and capable of continuous daily operation in the forward area, with maximum availability to the tactical commander. Normal operation is limited to day and night visual and marginal visual flight conditions.

The OH-58A can perform an unarmed observation mission with a 260-mile range or 3.0-hour endurance at a takeoff gross weight of 2760 pounds. It can perform a scout mission, armed with the M-27E-1 weapon system and 2000 rounds of ammunition, with a range at 230 miles at a takeoff gross weight of 2967 pounds.

This helicopter is the single engine, single main rotor type. The fuselage is divided into three main sections; the forward section which provides the cabin and fuel cell enclosures as well as the pylon support, the intermediate section which supports the engine provides the equipment and electronics compartments, and the tail boom which supports the horizontal stabilizer, the vertical stabilizer, and the tail rotor. The free turbine engine is mounted aft of the main rotor horizontally on top of the fuselage. The landing gear is the shock-absorbing skid type.

DEVELOPMENT

First production aircraft delivered ..... May 1969
Last production aircraft ..... November 1973

FEATURES

Dual controls
Rear seat palletized
Cargo platform
Two bladed seesaw rotor system

PERSONNEL

Crew (normal) 1
Observer 2
Copilot 1

WEIGHTS

LOADING	LB	L.F.
Empty	1671.1	
Empty (with armor)	1813	
Basic	1766.2	3.50
Design	3000	2.50
Combat		
Unarmed mission	2842.7	2.64
Armed mission .	3000	2.50
Max structural . .	3000	2.50

FUEL AND OIL

Fuel:
Grade..... JP-4
Spec..... MIL-T-5624
Alternate JP-5, MIL-T-5624
Emergency ..... MIL-G-5572 w/o TCP
No. Tanks..... 1
Location..... Fuselage
Qty ..... 71.5 gal (crash resistant)
Oil:
Engine
Spec..... MIL-L-23699
Alternate MIL-L-7808
No. Tanks..... 1
Location..... Fuselage
Transmission:
Spec..... MIL-L-23699
Alternate MIL-L-7808
M/R Hub..... Grade 30
Spec..... MIL-L-2104

AVIONICS / ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1520-00-169-7137
LIN K31042
UNIT PRICE: Refer to Table 4-1.

1-41. Loading and Performance — Typical Mission, OH-58A (Kiowa).

CONDITIONS	I BASIC MISSION (Unarmed Observation)	II ALTERNATE (Armed Scout)	III ALTERNATE MAX GW
TAKEOFF WEIGHT ..... lbs	2760	2967 4/	3000
Fuel ..... lbs	455	428	455
Payload	170	298	—
Takeoff Power Loading	9.15	9.84	—
Disk Loading ..... PSF	2.82	3.03	3.12
Speed for Min. R/D	43	43	43
Vertical Rate of Climb @ Sea Level 1/			
Max Rate of Climb @ Sea Level 1/	1780	1600	
Speed for Max R/C @ Sea Level	48	50	
Time Sea Level to 5000 Ft. 1/	3.5	4.0	
Time Sea Level to 10,000 Ft. 1/	7.5	8.5	
Service Ceiling (100 fpm) 2/	19,000	17,200	
Absolute Hover Ceiling 1/	8,000	5,400	
COMBAT RANGE	260	230	
Average speed	102	120	
Cruising Altitude	14,000	10,000	
Total Mission Time	2.98	2.47	
COMBAT RADIUS	147	121	
Average Speed	102	102	
Cruising Altitude	14,000	12,200	
Total Mission Time	2.98	2.47	
COMBAT WEIGHT 3/	2550	2770	
Combat Altitude	14,000	10,000	
Combat Speed	87	99	
Combat Climb 1/	1090	1120	
Service Ceiling 3/	21,000	19,500	
Absolute Hover Ceiling	10,600	8000	
Max R/C @ Sea Level 1/	1750	1600	
Speed for Max R/C	48	50	
Max Speed for @ Sea Level	120	120	
Basic Speed @ 5000 Ft.	114	114	

1/ Takeoff power up to 5 minutes.
2/ Normal Power.
3/ For Radius Mission.
4/ Includes M-27E-1 Armament Kit.

Performance Basis: Bell flight test 206A MOD.
All performance is out of ground effect and for standard atmospheric conditions.

1-42. Performance Notes, OH-58A (Kiowa).

RADIUS MISSION — I & II

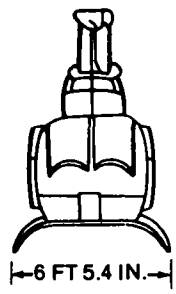
Warmup — Two minutes at normal power at sea level.
Takeoff and Climb — On course at military power to altitude for best range at average cruise weight.

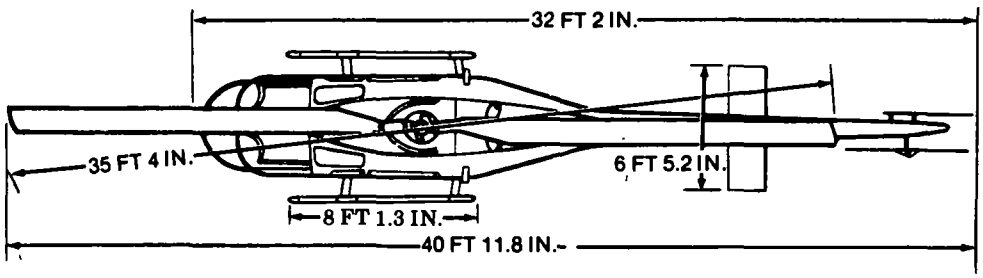
RANGE MISSION — I & II

Cruise — At speed for best range.
Reserve — 10% takeoff fuel.

SOURCE: TSARCOM-DRSTS-WO

DIMENSIONS	
Rotor dia.	35 Ft. 4 In.
Length:	
Rotors operating	40 Ft. 11.8 In.
Blades removed	32 Ft. 2.0 In.
Height:	
To top of rotor fairing	9 Ft. 7 In.
Tread of skids	6 Ft. 5.4 In.
Main rotor:	
Disk area	979.8 Sq. Ft.
Blade area	38.26 Sq. Ft.
Tail rotor:	
Disk area	20.97 Sq. Ft.
Blade area	2.26 Sq. Ft.





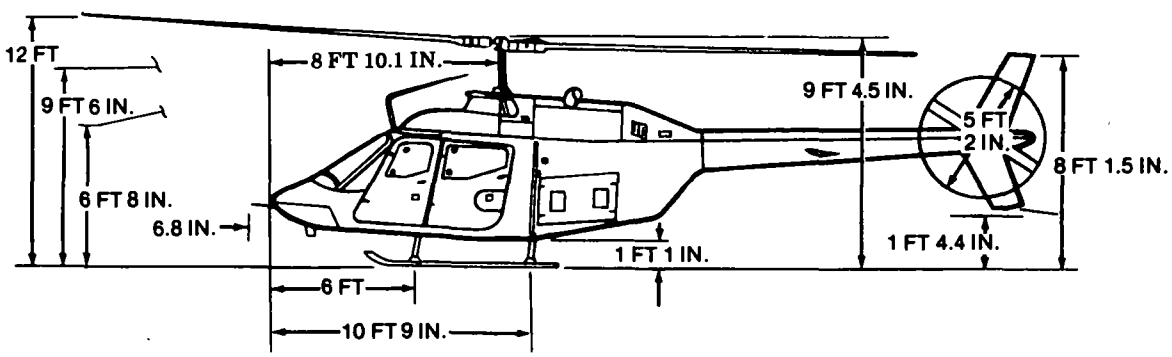
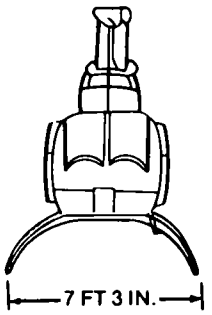
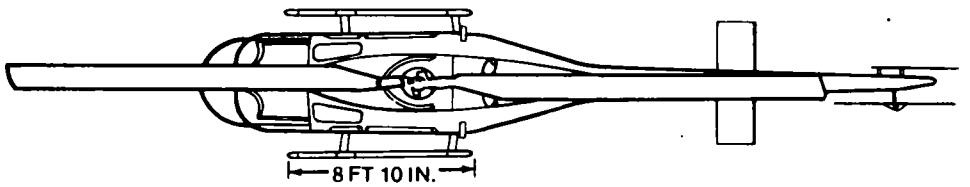


Figure 1-22. Principal Dimensions, OH-58C (Kiowa) Standard Skid Gear

DIMENSIONS

Rotor dia	35 Ft. 4 In.
Length:	
Rotors operating	40 Ft. 11.8 In.
Blades removed	32 Ft. 2.0 In.
Height:	
To top of rotor fairing	9 Ft. 7.0 In.
Tread of skids	7 Ft. 3 In.
Main rotor:	
Disk area	979.8 Sq. Ft.
Blade area	38.26 Sq. Ft.
Tail rotor:	
Disk area	20.97 Sq. Ft.
Blade area	2.26 Sq. Ft.





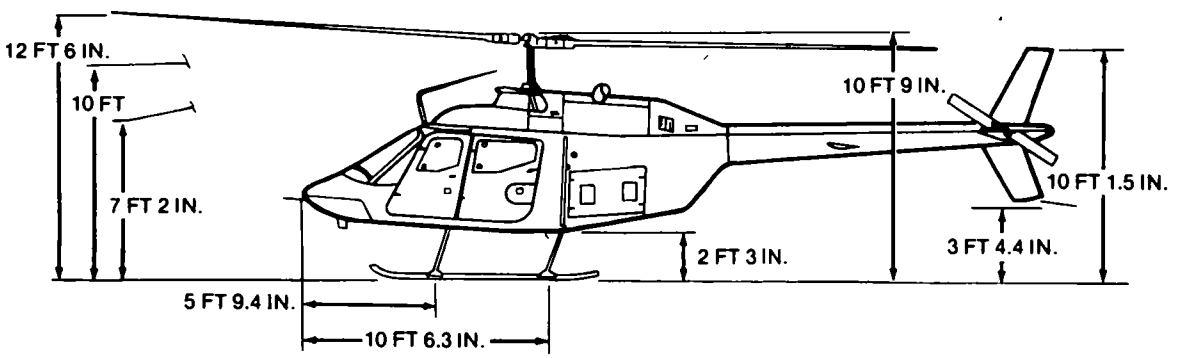


Figure 1-23. Principal Dimensions, OH-58C (Kiowa) High Skid Gear

1-43. OH-58C (Kiowa) Characteristics.

POWER PLANT

No. & model T63-A-720
Mfr ..... Detroit Diesel Allison
Engine spec. no..... 876
Type..... Axial-Centrifugal compressor, free turbine
Length..... 41.1
Width ..... 19.0 In.
Height..... 23.2 In.
Weight..... 158 Lbs.
Helicopter rotor gear ratio..... 17.44:1

ENGINE RATINGS

Standard Sea Level Static Conditions

	SHP	RPM	DUR
Takeoff	370	6016	5 min.
Normal	278	6016	Cont.*

*Derated for Transmission

TECHNICAL PUBLICATION

AIRFRAME:
TM 55-1520-228-23
TM 55-1520-235-10
TM 55-1520-235-CL
TM 55-1520-235-MTF
TM 55-1520-228-PM
TM 55-1520-228-23P
TM 55-1520-338-S

ENGINE
TM 55-2840-241-23
TM 55-2840-241-23P
DMWR 55-2840-242

MISSION AND DESCRIPTION

Mfg's Model: Bell 206A (MOD)

The missions for which the OH-58C Helicopter are employed are: Reconnaissance, security, aerial observation and target acquisition functions during daylight hours (stabilized optics), and will provide a limited night time capability (night vision goggles) for the conduct of these tasks. In performing these roles, the Interim Scout Helicopter will operate in cavalry, attack helicopter, and field artillery units."

The OH-58C can perform an unarmed observation mission with a 185-nm or 2.5-hour endurance at a takeoff gross weight of 3200 pounds.

This helicopter is the single engine, single main rotor type. The fuselage is divided into three main sections; the forward section which provides the cabin and fuel cell enclosures as well as the pylon support, the intermediate section which supports the engine provides the equipment and electronics compartments, and the tail boom which supports the horizontal stabilizer, the vertical stabilizer, and the tail rotor. The free turbine engine is mounted aft of the main rotor horizontally on top of the fuselage. The landing gear is the shock-absorbing skid type.

DEVELOPMENT

First production aircraft delivered..... July 79
Last production aircraft .....

FEATURES

Dual controls
Rear seat palletized
Cargo platform
Two bladed seesaw rotor system

PERSONNEL

Crew (normal)..... 1
Copilot..... 1

WEIGHTS

LOADING	LB	L.F.
Empty.....	1868.5	
Empty (with armor) ...	1976.5	
Basic	2337.6	3.20
Design.....	3200	2.34
Combat		
Unarmed mission	2915.6	2.57
Max structural ..	3200	2.34

FUEL AND OIL

Fuel:
Grade..... JP-4
Spec MIL-T-4624
Alternate . JP-5, MIL-T-5624
Emergency MIL-G-5572 w/o TCP
No. Tanks .. 1
Location ... Fuselage
Qty .....
73.0 gal (non-crash resistant)
71.5 gal (crash resistant)
Oil:
Engine
Spec MIL-L-23699
Alternate . MIL-L-7808
No. Tanks . 1
Location .. Fuselage
Transmission:
Spec MIL-L-23699
Alternate . MIL-L-7808
M/R Hub... Grade 30
Spec MIL-L-2104

AVIONICS / ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1502-01-020-4216
LIN *Z33527
UNIT PRICE: Refer to Table 4-1.

DO NOT

1-44. Loading and Performance — Typical Mission, OH-58C (Kiowa).

CONDITIONS	I BASIC MISSION (Unarmed Observation)	II ALTERNATE MAX GW
TAKEOFF WEIGHT ..... lbs	2915.6	3200
Fuel ..... lbs	456	456
Payload	284	—
Takeoff Power Loading		—
Disk Loading ..... PSF	2.98	3.32
Speed for Min. R/D	43	43
Vertical Rate of Climb @ Sea Level ..... Ft/Min	630	570
Max Rate of Climb 1/	-	—
Service Ceiling ..... Ft	16,400	15520
Absolute Hover Ceiling ..... Ft	12,300	7640
COMBAT RANGE 1/ ..... NM	185	175
Average Speed	100 K	—
Cruising Altitude		
Total Mission Time		
COMBAT RADIUS		
Average Speed		
Cruising Altitude		
Total Mission Time		
COMBAT WEIGHT		
Combat Altitude		
Combat Speed		
Combat Climb		
Service Ceiling		
Absolute Hover Ceiling		
Max R/C @ Sea Level		
Speed for Max R/C		
Max Speed @ Sea Level	120 K	
Basic Speed @ 5000 ft		

1/ 2000 ft. @ 95°F

NOTE: Final performance data not available pending completion of testing.

1-45. Performance Notes, OH-58C (Kiowa).

RADIUS MISSION — I & II

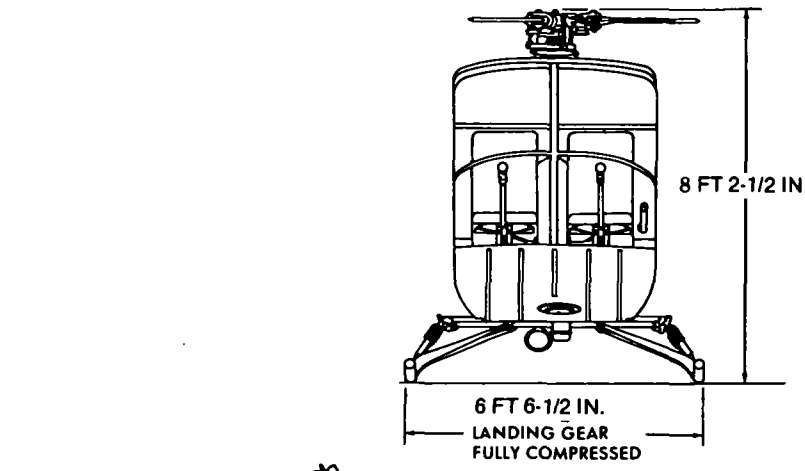
RANGE MISSION — I & II

Warmup — Two minutes at normal power at sea level.
Takeoff and Climb — On course at military power to altitude for best range at average cruise weight.
Cruise — At speed for best range.
Reserve — 10% takeoff fuel.

SOURCE: TSARCOM-DRSTS-WO

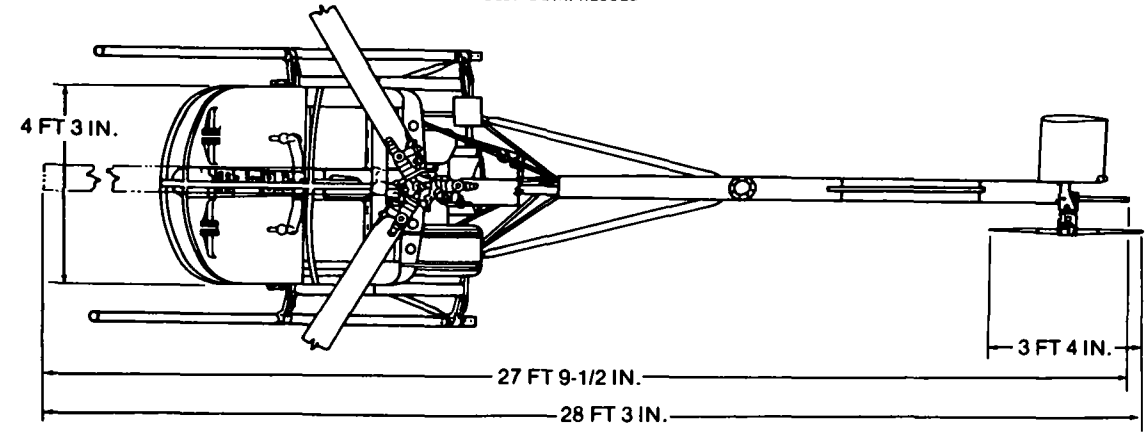
Figure 1-24. TH-55A (Osage)

DO NOT



DIMENSIONS

Rotor dia	22 Ft. 4 In.
Length:	
Rotors	
operating	28 Ft. 3 In.
static	22 Ft. 4 In.
Fuselage	21 Ft. 10-3/4 In.
Span (max lateral)	
Height	8 Ft. 2-1/2 In.
Tread	6 Ft. 3 In.
Ground clearance	
Static	3 Ft. 2-1/2 In.



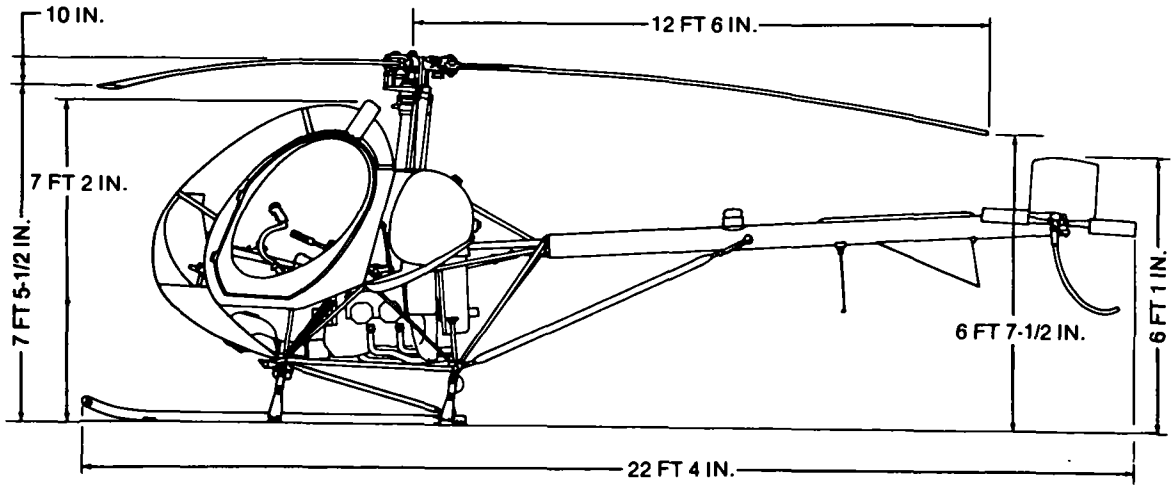


Figure 1-25. Principal Dimensions, TH-55A (Osage)

1-46. TH-55A (Osage) Characteristics.

ENGINE

No. & model .. (1) HI0-360-B1A
Mfr ..... Lycoming
Engine spec. No. 2313-b
Engine to main rotor rear ratio 6:1

ENGINE RATINGS

	BHP	RPM	MIN
Takeoff	180	2900	5
Normal max power	160	2700-2900	Cont.

TECHNICAL PUBLICATIONS

AIRFRAME:
TM 55-1520-233-10
TM 55-1520-233-CL
Commercial Manuals (Contractor Supported)

ENGINE:
Commercial Manual

MISSION AND DESCRIPTION

The TH-55A helicopter is manufactured by the Hughes Helicopter Company, Culver City, California. The mission of the TH-55A is the training of military pilots in the basic operation and performance of a helicopter. Training will be accomplished only in CONUS and from an established aviation training base.

The two-place cabin is designed to accommodate an instructor and student with the seating arrangement side by side. The instructor and student each have a complete set of flight controls.

DEVELOPMENT

Contract awarded ..... June 1964
First acft delivered ..... November 1964
Last production acft ..... April 1969

FEATURES

Dual Controls

PERSONNEL

Crew (Normal)..... 2
Instructor Pilot 1
Student Pilot..... 1

WEIGHTS

	LB
Empty	1008.1
Useful load	591.9
Design (gross)	1600
Combat	NA
Max takeoff	1600

FUEL AND OIL

Fuel:
Grade 115/145
Spec MIL-G-5572
No. of tanks 1
Location ..... Left rear of cabin
Qty ..... 25 gal
Oil:
Spec
Temps above +60°F ..... MIL-L-22851 Type II
Temps below +60°F ..... MIL-L-22851 Type III
No. tanks 1
Qty ..... 2 gal

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1520-00-758-0289
Line K31153

UNIT PRICE: Refer to Table 4-1.

DO NOT

1-47. Loading and Performance — Typical Mission, TH-55A (Osage).

CONDITIONS		BASIC MISSION
Fuel at 6.0 lb/gal (grade 115/145)	(lb)	150
Payload	(lb)	591.9
Cruise speed at SL	(kn)	75
Rate of climb at SL	(ft/min)	1400
Endurance (2700 rpm)		2-1/2 hrs at 65 knots cruise speed (min)
Hover ceiling, out of ground effect, 110°F	(ft)	1000 (min)
Normal autorotation speed	(kn)	45
Normal autorotation rotor speed	(rpm)	480
Autorotation rate of descent at 1000 ft, 100°F, 480 rpm and 45 knots	(ft/min)	1900 (max)
Altitude necessary to regain normal autorotation rotor speed from lower red line	(ft)	200 (max)
Range (normal)	(nmi)	200
Service ceiling	(ft)	11,000

Source: TSARCOM-DRSTS-WO

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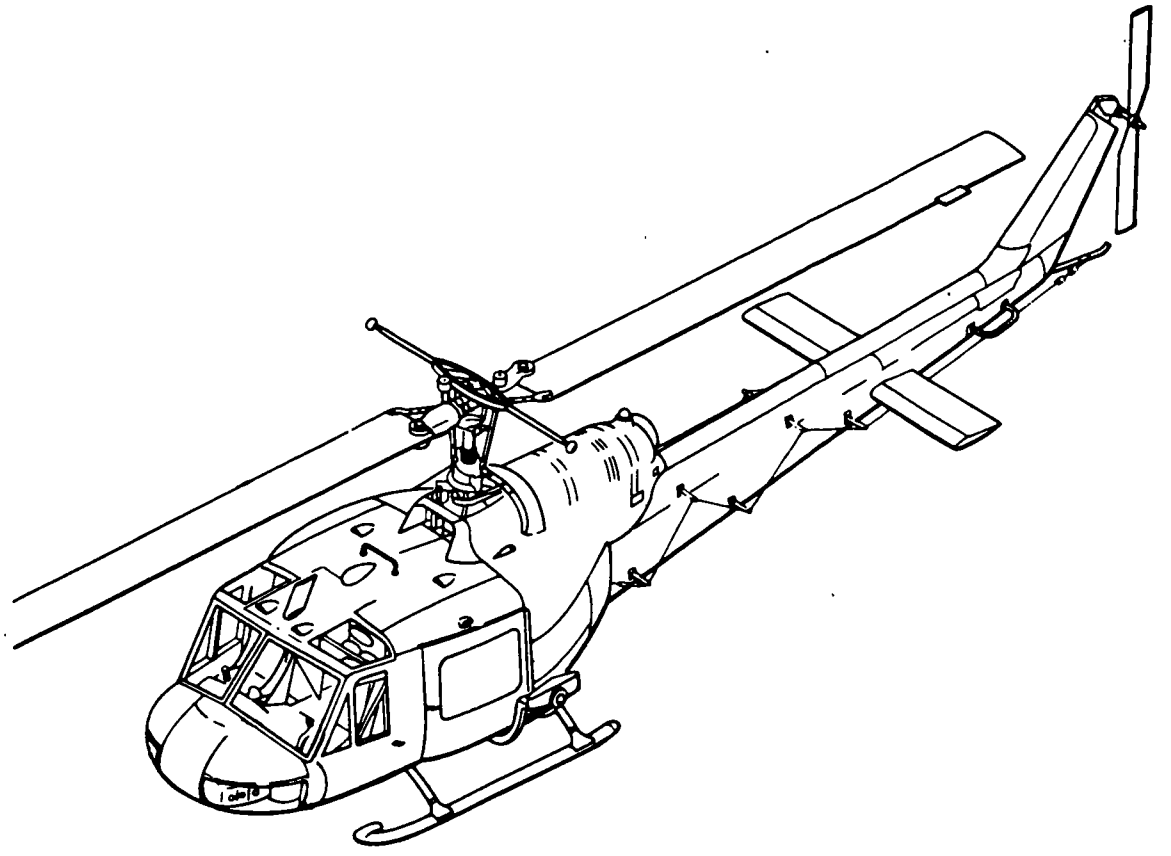
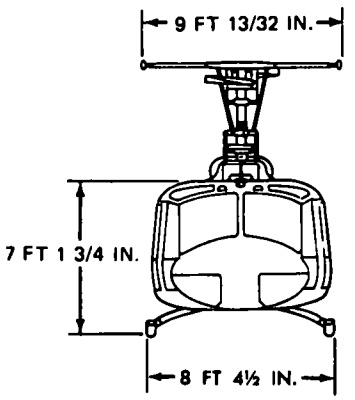
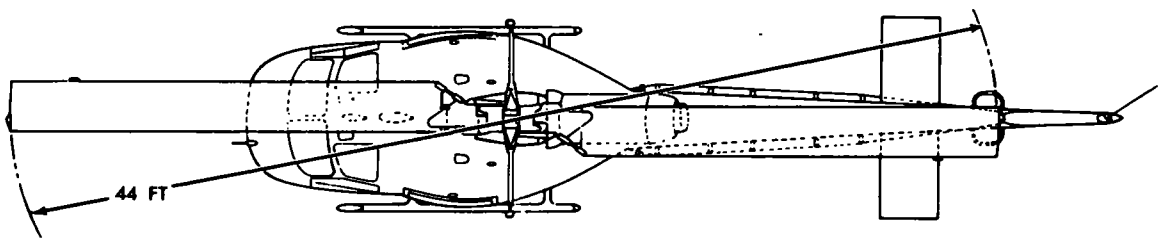


Figure 1-26. UH-1M (Iroquois), Typical



DIMENSIONS

Rotor dia	44 Ft.
Length:	
Rotors operating	53 Ft.
Rotors static	53 Ft.
Fuselage	42 Ft. 8 In.
Span (max lateral)	9 Ft. 1/2 In.
Height	14 Ft. 9 In.
Tread	8 Ft. 4-1/2 In.
Rotor gnd clearance: (static)	7 Ft. 4-1/2 In.



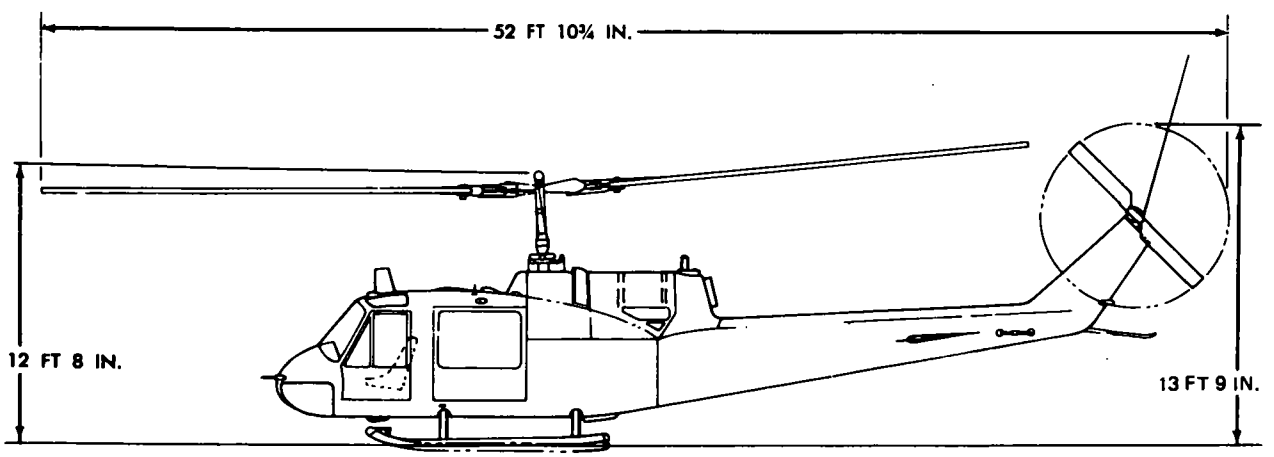


Figure 1-27. Principal Dimensions, UH-1M (Iroquois)

1-48. UH-1M (Iroquois) Characteristics.

ENGINE

No. & model ..... (1) T53-L-13B

Mfr	Lycoming
Type	104.33
Red. gear ratio	0.312
Tailpipe	Fixed area
Augmentation	None

ENGINE RATINGS

T53-L-13B

Rating/SL	SHP	SFC	Output RPM
Mil	1400*	0.580	6300
NRP	1250*	0.598	6040

* 1400 SHP flat rated to 1100 SHP.

TECHNICAL PUBLICATION

AIRFRAME:
- TM 55-1520-220-10
- TM 55-1520-210-23&P
- TM 55-1520-219-L
- TM 55-1520-219-MTF
- TM 55-1520-220-CL
- TM 55-1520-220-PM
- TM 55-1520-220-PMD
- TM 55-1520-242-S

ENGINE:
- TM 55-2840-229-23
- TM 55-2840-229-23P
- DMWR 55-2840-113

MISSION AND DESCRIPTION

Mfr's Model: Bell

The principal missions of the UH-1M helicopter are transporting personnel, special teams or crews, equipment and supplies; medical evacuation; ambulance service; reconnaissance and security; point target and area fire by attachment of appropriate weapons; and instrument trainer. These missions may be performed from prepared or unprepared takeoff and landing areas, under instrument operations including light icing, and day or night flight. Navigation may be by dead reckoning or by use of radio aids.

The main difference between the UH-1M and UH-1C is the T53-L-13. The UH-1M has the 540 rotor system which has a flexure plate, hinge-half type hub and a wider chord blade. The 540 rotor system provides a more stable gun platform, higher maximum gross weight, and higher forward speed. Some UH-1Ms have complete provisions for a variable speed, power driven hoist supported by a swing boom, capable of lifting personnel or up to 600 pounds of cargo.

DEVELOPMENT

Contracting agency	AVSCOM
Delivery schedule	June 1965 thru November 1967

CAPACITIES

Cargo area:	
Length (overall)	4 ft
Width (floor level)	6 ft. 8-1/2 in.
Height (max)	4 ft
Copilot area:	
Length (overall)	4 ft, 7 in.
Width (floor level)	2 ft, 7 in.
Height (max)	4 ft
Main cargo door	
Height (max)	4 ft
Weight (max)	4 ft
Limit floor loads (overall)	
Cargo area	300 lb/sq ft
Copilot area	75 lb/sq ft
Usable cubage	
Cargo area	140 cu ft
Copilot area	20 cu ft

PERSONNEL

Basic mission	
Crew (pilot and medical attendant)	2
Litters	3
Transport mission	
Crew	1
Passengers	4
Alternate	
Crew	1
Passengers	7
Trainer	
Crew (instructor & student)	2
Ferry	
Crew	1

WEIGHTS

	LB	L.F.
Empty	4830	
Gross	9500	

FUEL AND OIL

Fuel:	
Grade	JP-4/5
Spec	MIL-T-5624
Qty	242 gal
Oil:	
Spec	MIL-L-7808 or MIL-L-23699
Qty-Engine	4 gal
Qty-Transmission and gear boxes	2.8 gal

AVIONICS / ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 520-00-809-2631
Line, K1804

UNIT PRICE: Refer to Table 4-1.

80 100

1-49. Performance — Typical Mission, UH-1M (Iroquois).

Takeoff distance ..... (ft)	0
Rate of climb ..... (fpm)	2,420
Service ceiling ..... (ft)	21,100
Cruise speed 1/ ..... (kn)	92-110
Max speed ..... (kn)	140
Range ..... (nmi)	300
Landing distance ..... (ft)	0

1/ Normal rated power (6600 rpm) at sea level.

Source: TSARCOM-DRSTS-WU

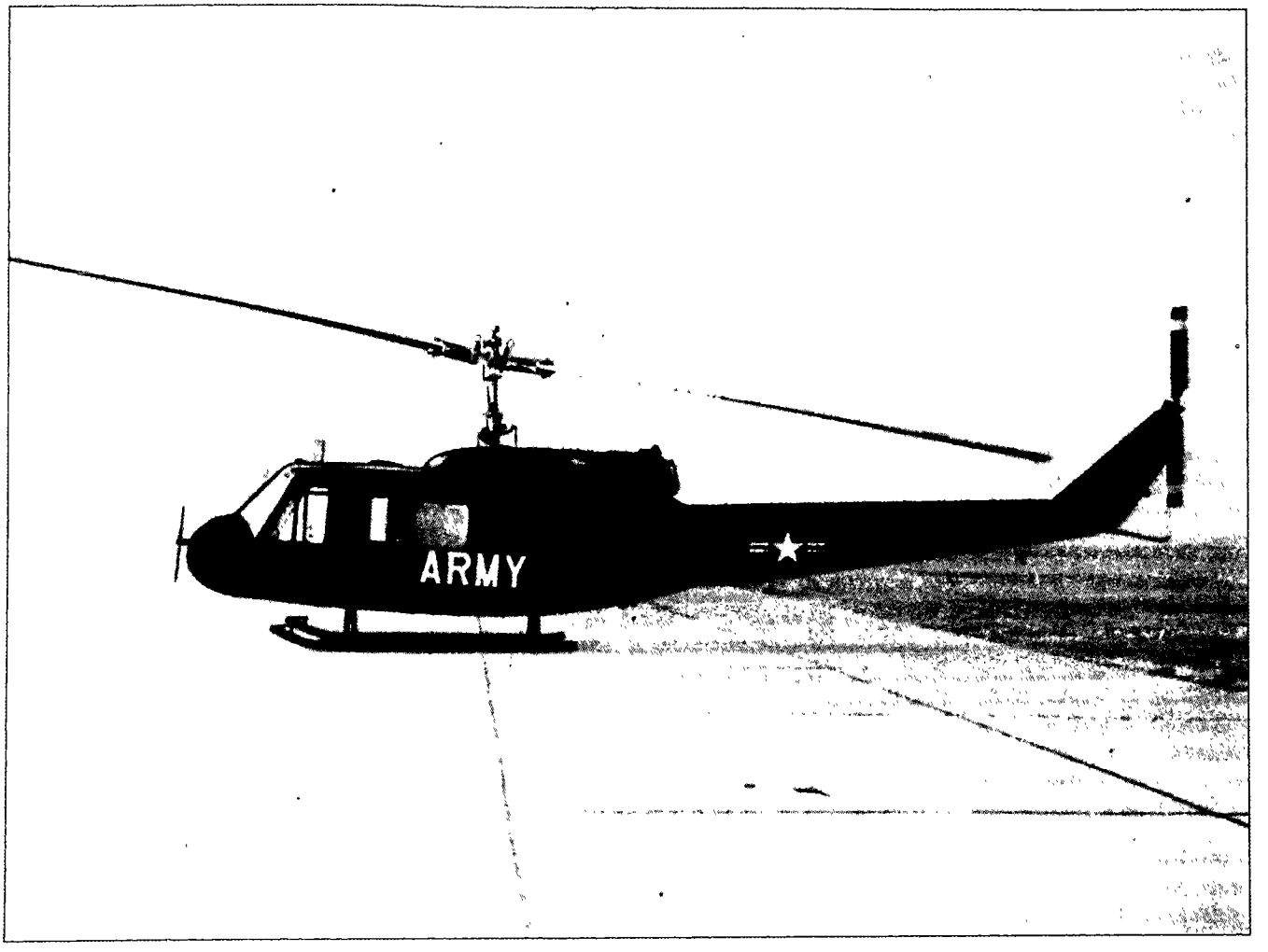
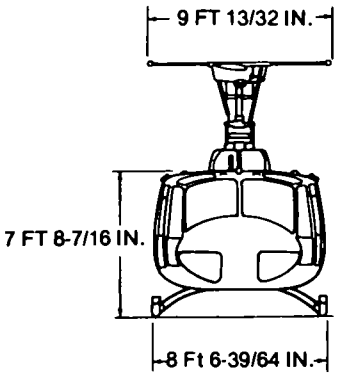


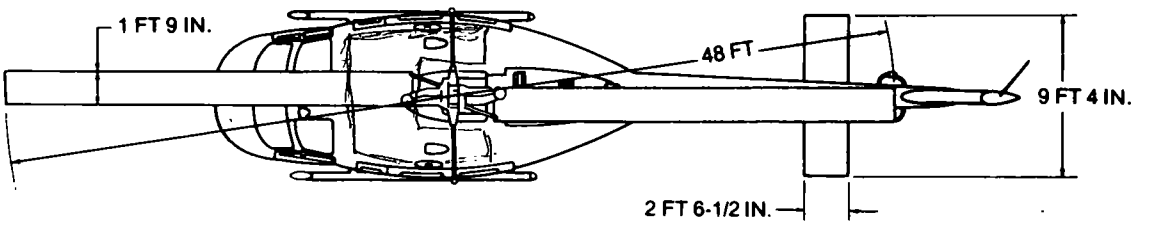
Figure 1-28. UH-1H, V (Iroquois), Typical

DO NOT

DIMENSIONS

Rotor dia	48 Ft.
Length:	
Rotors operating	57 Ft. 1 In.
Rotors static	57 Ft. 1 In.
Fuselage	41 Ft. 11-1/4 In.
Span (max lateral)	9 Ft. 4 In.
Height	14 Ft. 5-1/2 In.
Tread	8 Ft. 6-1/2 In.
Gnd clearance (static, against stops)	6 Ft. 6 In.





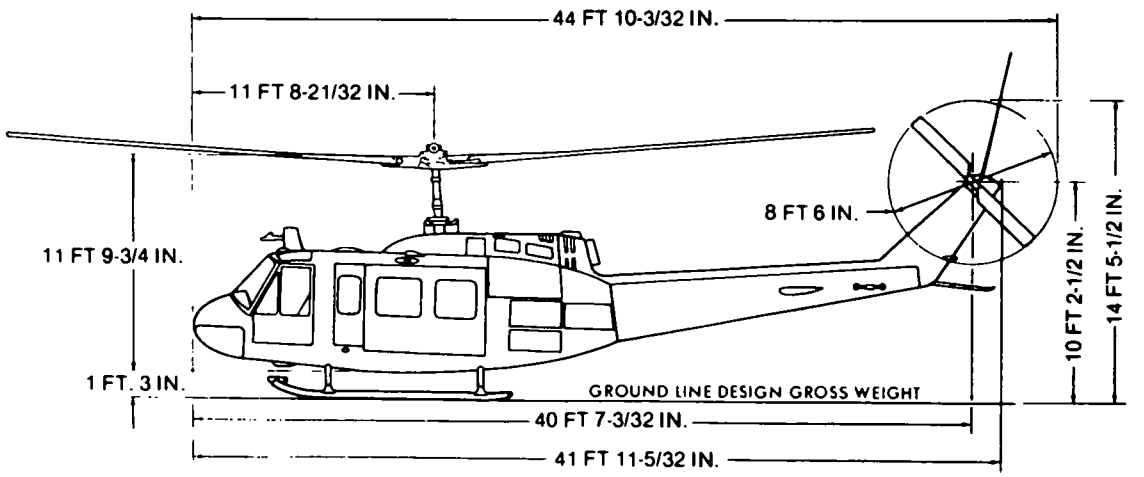


Figure 1-29. Principal Dimensions, UH-1H (Iroquois)

1-50. UH-1H (Iroquois) Characteristics.

ENGINE

No. & model .... (1) T53-L-13B

Mfr ..... Lycoming
Type 104.33
Red. gear ratio .. 0.312
Tailpipe ..... Fixed area
Augmentation .. None

ENGINE RATINGS

T53-L-13B

Rating/SL	SHP	SFC	Output RPM
Mil	1400*	0.580	6300
NRP	1250*	0.598	6040

* 1400 SHP flat rated to 1100 SHP.

TECHNICAL PUBLICATION

AIRFRAME:
TM 55-1520-220-CL:
TM 55-1520-220-PM
TM 55-1520-220-PMD
TM 55-1520-220-10
TM 55-1520-220-23
TM 55-1520-219-L
TM 55-1520-242-S
TM 55-1520-210-23P
TM 55-1500-219-MTF

ENGINE:
TM 55-2840-229-23
TM 55-2840-229-23P
DMWR 55-2840-113

MISSION AND DESCRIPTION

Mfr's Model: Bell 205

The UH-1H is the latest of the UH-1 series. Its mission include troop assault, command and control, delivery of internal and external cargo, medical evacuation and liaison. These missions may be performed from prepared or unprepared takeoff and landing areas, under instrument operations including light icing, and day or night flight.

The sliding doors along each side of the cabin allow simplified straight-through loading from either side or both sides simultaneously. This capability is especially useful while loading or unloading litter patients. The knee-high cargo floor also contributes to loading ease. Some UH-1H have complete provisions for a variable speed, power-driven hoist supported by a swing boom, capable of lifting personnel up to 600 pounds while hovering.

CAPACITIES

Inside clearance
Cargo area:
Length (overall) .. 7 ft, 8 in.
Width (floor level) ..... 8 ft
Height (max) .... 4 ft, 1 in.
Copilot area:
Length (overall) .. 3 ft, 7 in.
Width ..... 2 ft, 7 in.
Height (max) .... 4 ft
Main cargo door
Height (max) ..... 4 ft
Width (max) ..... 6 ft, 2-1/2 in.
Height above ground ..... 2 ft
Limit floor loads
Cargo area ..... 300 lb/sq ft
Copilot area ..... 75 lb/sq ft
Usable cubage
Capacity:
Cargo area ..... 220 cu ft
Copilot area .... 20 cu ft

PERSONNEL

Basic mission
Crew 1
Passengers 4
Alternate
Crew 1
Passengers 12
Litter evacuation
Crew (pilot & medical attendant) 2
Litters 6
Cargo
Crew 1
Ferry mission
Crew (pilot & copilot) 2

WEIGHTS

	LB	L.F.
Empty	5132	
Design	6600	3.0
Combat	9500	2.2
Max takeoff	9500	2.2
Max landing	9500	

FUEL AND OIL

Fuel:
Grade JP-4/5
Spec MIL-T-5624
No. tanks:
Fuselage ..... (1) 209 gal
Ferry ..... (1) 300 gal
Total qty ..... 509 gal
Oil:
Spec ..... MIL-L-23699 or MIL-L-7808
No. tanks 1
Location ..... Fuselage
Qty ..... 4-1/2 gal

AVIONICS / ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1520-00-087-7636
LIN K31795

UNIT PRICE: Refer to Table 4-1.

1-51. Loading and Performance — Typical Missions, UH-1H and UH-1V (Iroquois).

CONDITIONS	BASIC (PERSONNEL CARRIER)	TRANSPORT (CARGO OR TROOP)	LITTER EVACUATION	FERRY
TAKEOFF WEIGHT (lb)	7644 6/	9264 6/	7414 5/	9305 5/
Fuel at 6.5 lb/gal (grade JP-4) (lb)	1370	1370	1370	3320 7/
Payload (outbound) (lb)	800	2420	0	0
Payload (inbound) (lb)	0	0	1500 9/	0
Takeoff power loading 8/ (lb/SHP)	6.94	8.42	6.74	8.45
Disk loading (lb/sq ft)	4.22	5.11	4.10	5.14
Autorotation speed (min R/D) (kn)	61	65	60	65
Takeoff ground run at SL (6600 rpm) 1/ (ft)	0	0	0	0
Takeoff to clear 50 ft (6600 rpm) 1/ (ft)	0	0	0	0
Vertical rate of climb at SL (6600 rpm) 1/ (fpm)	1620	420	1960	580
Maximum rate of climb at SL 2/ (fpm)	1653	1126	1691	1112
Speed for max R/C at SL (kn)	61	65	60	65
Time: SL to 5000 ft 2/ (min)	3.1	4.6	2.9	4.1
Time: SL to 10,000 ft 2 (min)	6.2	9.9	5.9	10.2
Service ceiling (100 fpm) 2/ (ft)	18,340	13,960	19,140	13,640
Absolute hovering ceiling (6600 rpm) 1/ (ft)	14,800	4000	16,000	3600
COMBAT RANGE 10/ (nmi)	275	250	....	676
Average cruise speed (kn)	111	105	....	110
Cruising altitude (initial) (ft)	2000-4000	2000-4000	....	2000-4000
Cruising altitude (final) (ft)	2000-4000	2000-4000	....	2000-4000
Total mission time (hr)	2.46	2.37	....	6.13
COMBAT RADIUS 10/ (nmi)	141	124	133	....
Average speed (kn)	111	107	121	....

1-51. Loading and Performance — Typical Missions, UH-1H and UH-1V (Iroquois) (Con't).

CONDITIONS	BASIC (PERSONNEL CARRIER)	TRANSPORT (CARGO OR TROOP)	LITTER EVACUATION	FERRY
Cruising altitude (outbound) (min/max) ..... (ft)	2000-4000	2000-4000	2000-4000	.....
Cruising altitude (inbound) ..... (ft)	2000-4000	2000-4000	2000-4000	.....
Total mission time ..... (hr)	2.73	2.54	2.38	.....
FIRST LANDING WEIGHT[3] ..... (lb)	6997	8584	6789	.....
Ground roll at SL (6600 rpm) ..... (ft)	0	0	0	.....
Total from 50 ft (6600 rpm) ..... (ft)	0	0	0	.....
COMBAT WEIGHT[3] ..... (lb)	6197	6164	8289	6316
Combat altitude ..... (ft)	2000-4000	2000-4000	2000-4000	2000-4000
Combat speed[4] ..... (kn)	116	116	120	116
Combat climb[2] ..... (fpm)	2256	2276	1370	2200
Combat ceiling (500 ft/min)[2] ..... (ft)	23,550	23,694	15,960	23,150
Service ceiling (100 ft/min)[2] ..... (ft)	24,070	24,210	16,842	23,680
Absolute hovering ceiling (6600 rpm)[1] ..... (ft)	21,300	21,400	11,600	20,700
Takeoff ground run at SL (6600 rpm)[1] ..... (ft)	0	0	0	0
Takeoff to clear 50 ft (6600 rpm)[1] ..... (ft)	0	0	0	0
Maximum rate of climb at SL[2] ..... (fpm)	2232	2251	1399	2178
Speed for max R/C at SL ..... (kn)	55.9	55.8	62.0	56.1
Max speed at SL[4] ..... (kn)	120	120	120	120
Basic speed at 5000 ft[4] ..... (kn)	120	120	120	120
LANDING WEIGHT[3] ..... (lb)	6977	8584	6789	6316
Ground roll at SL (6600 rpm) ..... (ft)	0	0	0	0
Total from 50 ft (6600 rpm) ..... (ft)	0	0	0	0

1-51. Loading and Performance — Typical Missions, UH-1H and UH-1V (Iroquois) (Con't).

1/ Takeoff power.

2/ Normal rated power.

3/ For RADIUS mission if radius is shown.

4/ V_{ne} limit.

5/ Includes crew of 2 at 400 lb.

6/ Includes crew of 1 at 200 lb.

7/ Includes two 150-gallon ferry tanks.

8/ Based on engine specification takeoff shaft horsepower.

9/ Six 250-pound litter patients.

10/ Detailed descriptions of RADIUS and RANGE missions are same as shown in paragraph 1-38.

Performance Basis:

a. Reference operator's Manual Army Model UH-1 H Helicopter TM 55-1520-210-10.

b. All data are at 6600 rpm unless otherwise noted.

Source: TSARCOM-DRSTS-WU

1-52. Performance Notes, UH-1H and UH-1V (Iroquois).

FORMULA: RADIUS MISSION I

Warm up, take off, climb on course to 2000-4000 feet initial altitude at normal rated power, proceed at long range cruise speed to remote base, land, and unload passengers. Without refueling, warm up, take off, climb on course to 2000-4000 feet at normal rated power, and return at long range cruise speed. Range-free allowances are 4 minutes at normal rated power for warmups and takeoffs plus 10 percent of initial fuel for reserve.

FORMULA: RADIUS MISSION II

Warm up, take off, and climb on course to 2000-4000 feet at normal rated power. Cruise climb on course at long range cruise speed to final altitude of 2000-4000 feet. Proceed at long range speed to remote base, land, and unload cargo or troops. Without refueling, warm up, take off, climb on course to 2000-4000 feet at normal rated power, and return at long range cruise speed. Range-free allowances are 4 minutes at normal rated power for warmups and takeoffs plus 10 percent of initial fuel for reserve.

FORMULA: RADIUS MISSION III

Warm up, take off, and climb on course to 2000-4000 feet at normal rated power. Proceed at long range cruise speed to remote base, land, and pick up litter patients. Without refueling, warm up, take off, climb on course to 2000-4000 feet at normal rated power, and return at long range cruise speed. Range-free allowances are 4 minutes at normal rated power for warmups and takeoffs plus 10 percent of initial fuel for reserve.

FORMULA: RANGE MISSION I

Warm up, take off, and climb on course to 2000-4000 feet initial altitude at normal rated power. Proceed at long range cruise speed to remote base and land. Range-free allowances are 2 minutes at normal rated power for warmup and takeoff plus 10 percent of initial fuel for reserve.

FORMULA: RANGE MISSION II

Warm up, take off, and climb on course to 2000-4000 feet at normal rated power. Cruise climb on course at long range cruise speed to final altitude of 2000-4000 feet. Proceed at long range cruise speed to remote base and land. Range-free allowances are 2 minutes at normal rated power for warmup and takeoff plus 10 percent of initial fuel for reserve.

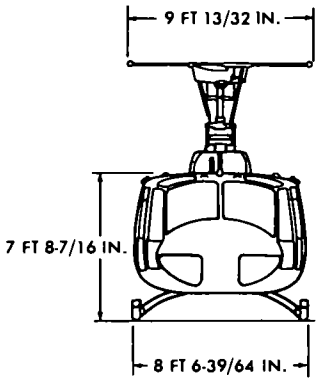
FORMULA: RANGE MISSION III

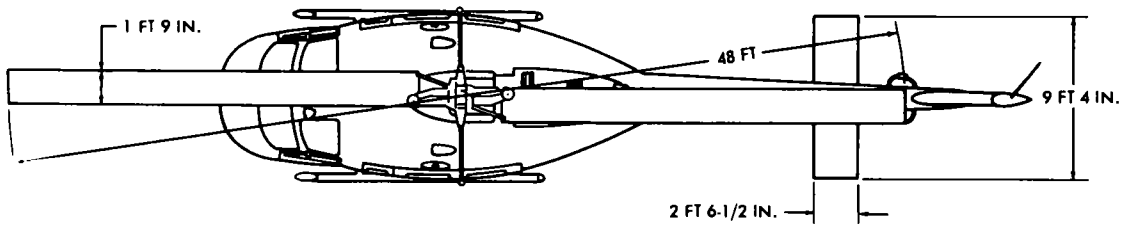
Warm up, take off, and climb on course to 2000-4000 feet at normal power. Cruise climb on course at long range cruise speed to final altitude of 2000-4000 feet. Proceed at long range cruise speed to remote base and land. Range-free allowances are 2 minutes at normal rated power for warmup and takeoff plus 10 percent of initial fuel for reserve.

Source: TSARCOM- DRSTS-WU
TSARCOM- DRCPM-AEL

DIMENSIONS

Rotor dia	48 Ft.
Length:	
Rotors operating	57 Ft. 1 In.
Rotors static	57 Ft. 1 In.
Fuselage	41 Ft. 11 1/4 In.
Span (max lateral)	9 Ft. 4 In.
Height	14 Ft. 5-1/2 In.
Tread	8 Ft. 6-1/2 In.
Gnd clearance (static, against stops)	.6 Ft. 6 In





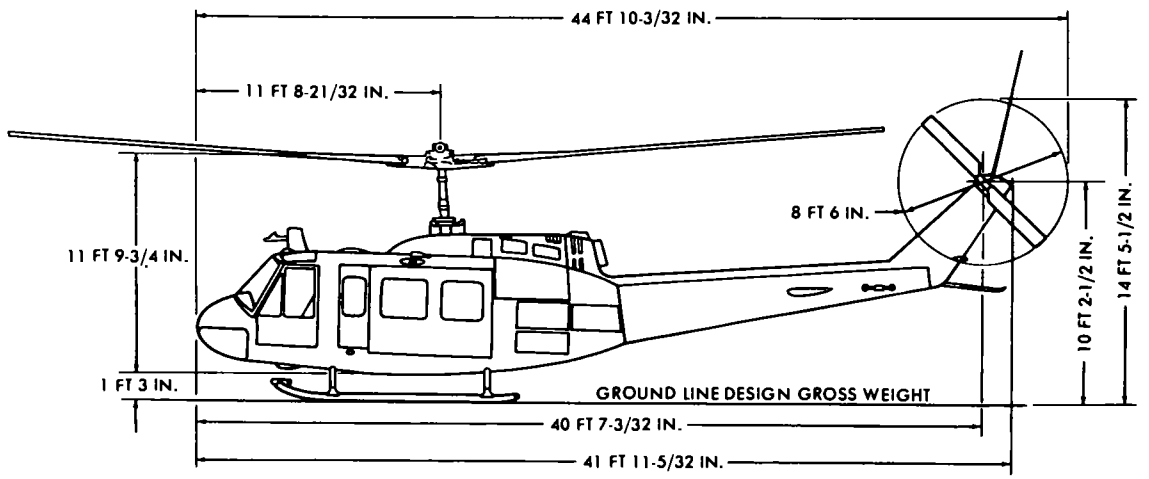


Figure 1-30. Principal Dimensions, UH-1V (Iroquois)

1-53. UH-1V (Iroquois) Characteristics.

ENGINE

No. & model .... (1)T53-L-13B

Mfr ..... Lycoming
Type 104.33
Red. gear ratio .. 0.312
Tailpipe ..... Fixed area
Augmentation .. None

ENGINE RATINGS

T53-L-13B

Rating/SL	SHP	SFC	Output RPM
Mil	1400*	0.580	6300
NRP	1250*	0.598	6040

* 1400 SHP flat rated to 1100 SHP.

TECHNICAL PUBLICATION

AIRFRAME:
TM 55-1500-219-L
TM 55-1500-219-MTF
TM 55-1520-210-CL
TM 55-1520-210-PM
TM 55-1520-210-PMD
TM 55-1520-210-10
TM 55-1520-210-23
TM 55-1520-242-S
TM 55-1520-210-23P

ENGINE:
TM 55-2840-229-23
TM 55-2840-229-23P
DMWR 55-2840-113

MISSION AND DESCRIPTION

Mfr's Model: Bell 205

The UH-1V is a UH-1H converted to a medical evacuation aircraft, the only difference in the conversion is installation of DME and a radar altimeter. This aircraft will be furnished all med evac units.

DEVELOPMENT

First flight (Similar aircraft) .....
First acft delivered ..... Mar 79

CAPACITIES

Inside clearance
Cargo area:
Length(overall)..7 ft,8 in.
Width(floor level).....8 ft
Height(max).....4 ft,1 in.
Copilot area:
Length(overall)..3 ft,7 in.
Width.....2 ft,7 in.
Height(max).....4 ft
Main cargo door
Height.....4 ft
Width(max).....6 ft,2-1/2 in.
Height above ground.....2 ft
Limit floor loads
Cargo area.....300 lb/sq ft
Copilot area.....75 lb/sq ft
Usable cubage
Capacity
Cargo area.....220 cu ft
Copilot area.....20 cu ft

PERSONNEL

Basic mission
Crew.....1
Passengers.....4
Alternate
Crew.....1
Passengers.....12
Litter evacuation
Crew(pilot & medical attendant).....2
Litters.....6
Cargo
Crew.....1
Ferry mission
Crew(pilot & copilot).....2

WEIGHTS

	LB	L.F.
Empty	5132	
Design	6600	3.0
Combat	9500	2.2
Max takeoff	9500	2.2
Max landing	9500	

FUEL AND OIL

Fuel:
Grade JP-4/5
Spec MIL-T-5624
No. tanks:
Fuselage ..... (1) 209 gal
Ferry ..... (1) 300 gal
Total qty ..... 509 gal
Oil:
Spec ..... MIL-L-23699 or MIL-L-7808
No. tanks 1
Location ..... Fuselage
Qty ..... 4-1/2 gal

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

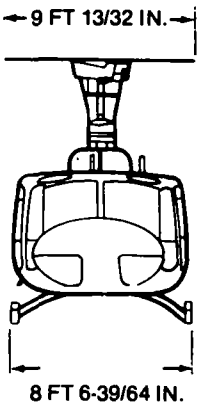
NSN, 1520-01-043-4949,

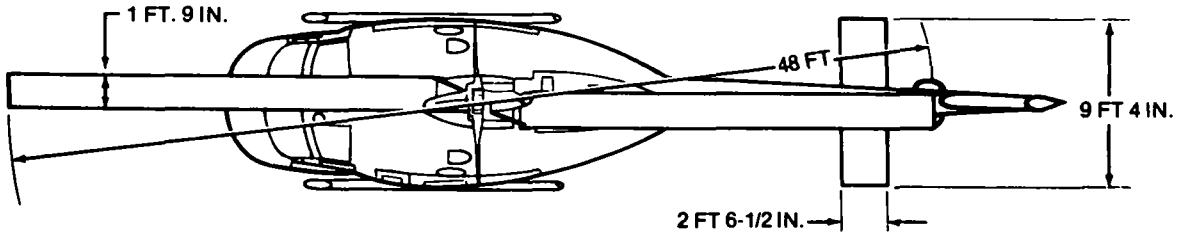
UNIT PRICE: Refer to Table 4-1.

DO NOT

DIMENSIONS

Rotor dia	48 Ft.
Length:	
Rotors operating	57 Ft. 1 In.
Rotors Static	57 Ft. 1 In.
Fuselage	41 Ft 11-1/4 In.
Span (max Lateral)	9 Ft. 4 In.
Height	14 Ft. 5-1/2 In.
Tread	8 Ft. 6-1/2 In.
Gnd clearance (static, against stops)	6 Ft. 6 In.





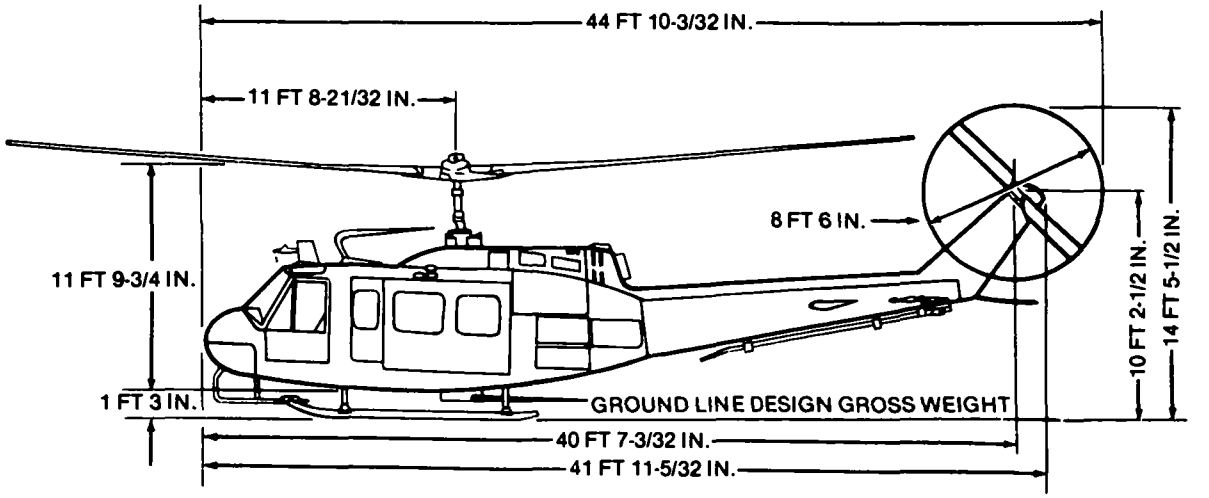


Figure 1-31. Principal Dimensions, EH-1H (Quick fix)

1-54. EH-1H (Quick Fix) Characteristics.

ENGINE

No. & model .... (1) T53-L-13B
Mfr ..... Lycoming
Type 104.33
Red. gear ratio .. 0.312
Tailpipe ..... Fixed area
Augmentation .. None

ENGINE RATINGS

T53-L-13B

Rating/SL	SHP	SFC	Output RPM
Mil	1400*	0.580	6300
NRP	1250*	0.598	6040

* 1400 SHP flat rated to 1100 SHP.

TECHNICAL PUBLICATION

AIRFRAME:
TM 55-1500-219-L
TM 55-1500-219-MTF
TM 55-1520-210-CL
TM 55-1520-210-PM
TM 55-1520-210-PMD
TM 55-1520-210-10
TM 55-1520-210-23
TM 55-1520-242-S
TM 55-1520-210-23P

ENGINE:
TM 55-2840-229-23
TM 55-2840-229-23P
DMWR 55-2840-113

MISSION AND DESCRIPTION

The EH-1H is a modified UH-1H configured to carry ECM equipment in the passenger/cargo area. The basic dynamic components and airframe are the same as the standard aircraft.

The mission for the EH-1H weapon system consists of airborne search, collection and jamming countermeasures of enemy single channel radio communications. This information is provided to Division/Brigade commanders in tactical situations. Recording/Reproducing capability is also included in the information collection system.

DEVELOPMENT

Date of contract, MIPR ..... 23 Jun 75
Contracting agency ..... NARF Pensacola
No. of test aircraft 1
First flight (scheduled) ..... 4 Aug 77
Completion of test and evaluation .. 16 Mar 77
Contract delivery schedule ..... 1 Jun 78

FEATURE

Crashworthy Fuel System
Retractable Antennas
30 KVA Alternator

PERSONNEL

Pilot 1
Copilot 1
Mission Operators 2

WEIGHTS

	LB	L.F.
Empty	6258	
Design	9500	
Combat	9500	
Max takeoff	9500	
Max landing	9500	

FUEL AND OIL

Fuel:
Grade JP-4/5
Spec MIL-T-5624
No. tanks:
Fuselage ..... (1) 209 gal
Ferry ..... (1) 209 gal
Total qty ..... 509 gal
Oil:
Spec ..... MIL-L-23699 or MIL-L-7808
No. tanks 1
Location ..... Fuselage
Qty ..... 4-1/2 gal

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

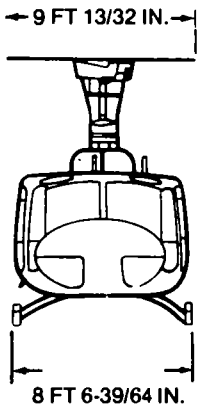
NSN 1520-00-368-8442
LINE K 30548

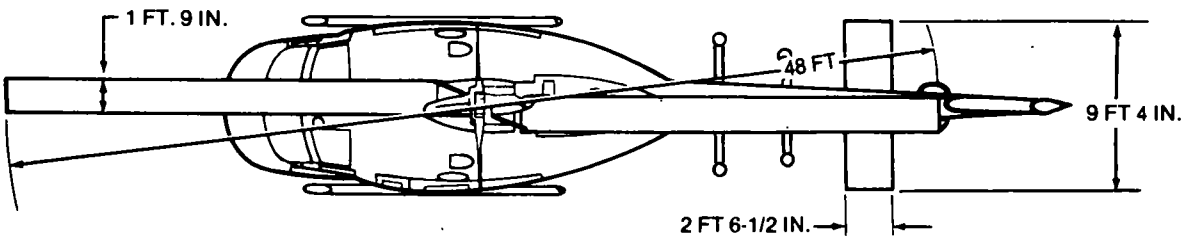
UNIT PRICE: Refer to Table 4-1.

DO NOT

DIMENSIONS

Rotor dia	48Ft.
Length:	
Rotors operating	57 Ft. 1 In.
Rotors Static	57 Ft. 1 In.
Fuselage	41 Ft. 11-1/4 In.
Span (max Lateral)	9 Ft. 4 In.
Height	14 Ft. 5-1/2 In.
Tread	8 Ft. 6-1/2 In.
Gnd clearance (static, against stops)	6 Ft. 6 In.





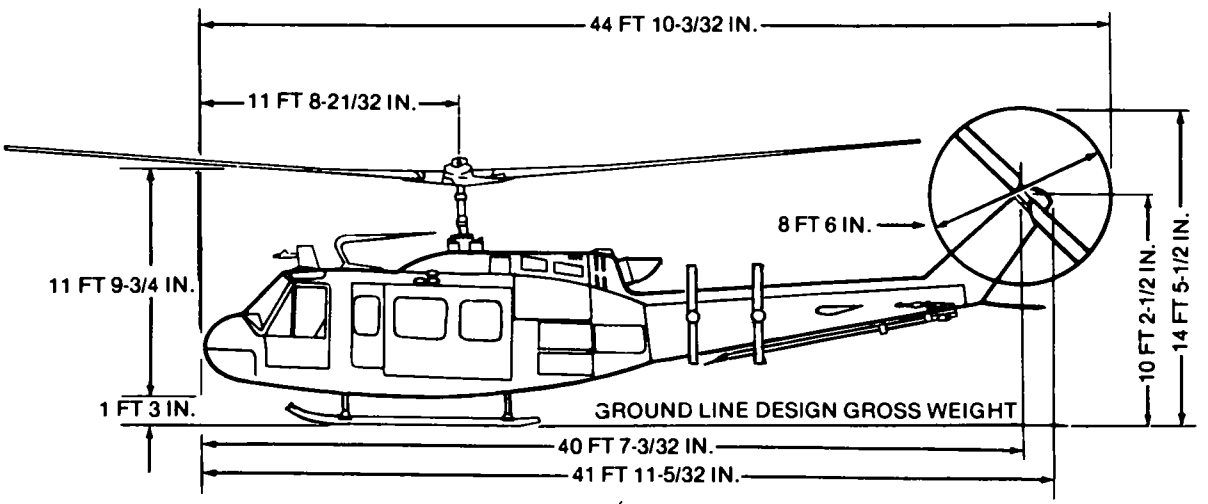


Figure 1-32. Principal Dimensions, EH-1X (Quick Fix II)

1-55. EH-1X (Quick Fix II) Characteristics.

ENGINE

No. & model	(1) T53-L-13B
Mfr	Lycoming
Type	104.33
Red. gear ratio	0.312
Tailpipe	Fixed area
Augmentation	None

ENGINE RATINGS

T53-L-13B

Rating/SL	SHP	SFC	Output RPM
Mil	1400*	0.580	6300
NRP	1250*	0.598	6040

* 1400 SHP flat rated to 1100 SHP.

TECHNICAL PUBLICATION

AIRFRAME:
- TM55-1520-210-10
- TM55-1520-210-23
- TM55-1520-210-23P
- TM55-1520-210-PM
- TM55-1520-210-PMD

ENGINE:
- TM55-2840-229-23
- TM55-2840-229-23P
- DMWR 55-2840-113

MISSION AND DESCRIPTION

MFRS MODEL: BELL 205

The Phase II QUICK FIX system is an airborne intercept, jamming & direction finding (DF) system. The system is designed to have up to 3 A/C operating simultaneously. Each A/C has the capability to initiate DF action on a target. During multiple A/C operation, DF commands are transmitted via a secure digital data link, to command the other A/C to take DF bearings on the same target. Resulting Lines of Bearing & A/C position are returned to the initiating A/C via the same data link. The EH-1X is a modified UH-1H using the basic airframe, components and powerplant.

DEVELOPMENT

Date of Contract	Jan 79
No of Test Aircraft	1
Follow on evaluation	July 80

FEATURES

30 KVA Alternator
Crash Worthy Fuel System
Lightweight Avionics

PERSONNEL

Pilot	1
Copilot	1
Mission Operators	1

WEIGHTS

	LB	L.F.
Empty	7025	
Design	9500	
Combat	9500	
Max takeoff	9500	
Max landing	9500	

FUEL AND OIL

Fuel:	
Grade	JP-4/5
Spec	MIL-T-5624
No. tanks:	
Fuselage	(1) 209 gal
Ferry	(1) 209 gal
Total qty	509 gal
Oil:	
Spec	MIL-L-23699 or MIL-L-7808
No. tanks	1
Location	Fuselage
Qty	4-1/2 gal

AVIONICS / ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1520-01-042-9396
LINE, H30829

UNIT PRICE: Refer to Table 4-1.

1-56. Loading and Performance — Special Mission, EH-1H and EH-1X (Estimated).

CONDITIONS		SPECIAL MISSION
Take-off weight (lb)		9500
Take-off distance (ft)		0
Rate-of-climb (fpm)		1000
Service ceiling (ft)		13000
Cruise speed (kn)		105 kns
Max speed (kn)		120 kns
Endurance (hr)	(1.5 hrs on station)	2.0
Landing distance (ft)		0

1-57. Performance Notes, EH-1H and EH-1X (Iroquois).

Performance of these aircrafts are similar to a heavily loaded UH-1H; however, does not have troop carrying or extended range capabilities.

Figure 1-33. UH-60A (Black Hawk)

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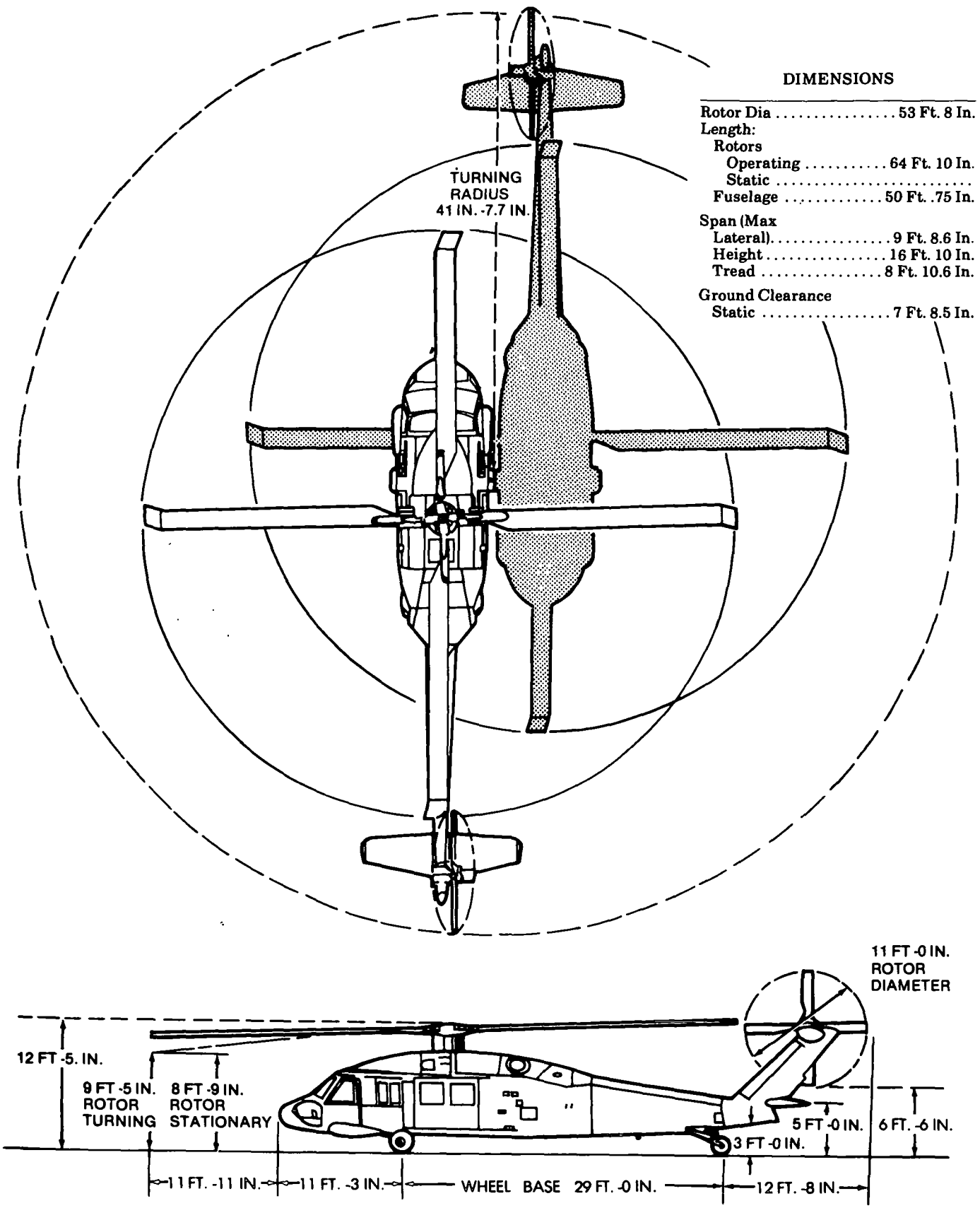

Figure 1-34. Principal Dimensions, UH-60A (Black Hawk)

1-58. UH-60A (Blackhawk) Characteristics.

ENGINE

No. & model .. (2)T700-GE-700
Mfr..... General Electric
Engine spec. no.
.. DARCOM-CP-2222-02000

Type ..... Turboshaft

Length..... 46.5 In.
Width ..... 25 In.
Height ..... 23 In.
Weight..... 415 Lbs.

ENGINE RATINGS

Standard Sea Level Conditions

	SHP	RPM
Max Continuous	1240	20900
IRP	1543	20900

TECHNICAL PUBLICATION

AIRFRAME:
TM 11-1520-237-23-1
TM 11-1520-237-23-2
TM 11-1520-237-23-3
TM 55-1500-237-5
TM 55-1520-237-10
TM 55-1520-237-23
TM 55-1520-237-23-1
thru
TM 55-1520-237-23-10
TM 55-1520-237-23P
TM 55-1520-237-23P-1
TM 55-1520-237-23P-2
TM 55-1520-237-CL
TM 55-1520-237-MTF
TM 55-1520-237-PMS-1
TM 55-1520-237-PMS-2

ENGINE:
TM 55-2840-248-23
TM 55-2840-248-23P

MISSION AND DESCRIPTION

The Blackhawk helicopter will perform primary and secondary missions of transporting internal loads under visual and instrument conditions day and night and external loads under visual flight conditions.

The Blackhawk (UH-60A) is a twin engine rotary wing aircraft which will carry eleven (11) combat equipped troops and a crew of three (3). Optional seating allows up to 14 combat equipped troops. When used as an aerial medical evacuation vehicle it will accomodate 4 litter patients and a medical attendant. An external cargo hook with 8,000 lbs. load capacity and provisions for an internal high performance rescue hoist are also provided. The UH-60A is designed to operate in temperatures from −65°F to +125°F.

DEVELOPMENT

Date of Contract ..... Nov 1976
First Flight (similar aircraft)..... Oct 1974
First Production Aircraft..... Oct 1978

CAPACITIES

Cargo Apartment
Floor
Length 110"
Length (including crew chief station) 151"
Width 72"
Height 53.5"
Cargo Door
Height 54"
Width 68"

PERSONNEL

Crew 3
Troops..... 11
(optional troop seatings).... 14

Litters..... 4
Attendant 1

WEIGHTS

LOADING	LB
Empty.....	10,680
Design Gross	16,326
Max Alternate	20,250

FUEL AND OIL

Fuel:
Grade JP-4
Spec MIL-T-5624
Alternate.... JP-5
Emergency ..

No. Tanks 2
Location..... Rear Fuselage
Qty ..... 362 Gallons

Oil:
Engine
Spec MIL-L-23699
Alternate.... MIL-L-7808
No. Tanks ... 1
Location..... Main Frame — Engine
Transmission:
Spec MIL-L-23699
Alternate.... MIL-L-7808

AVIONICS / ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1520-01-035-0266, LIN K32293, Unit Cost: Refer to Table 4-1.

1-59. Loading and Performance 1/. Typical Missions, UH-60A (Black Hawk).

CONDITIONS	COMBAT ASSAULT SEA LEVEL		COMBAT ASSAULT 4000'/95°F		MAX ALT GROSS WT SEA LEVEL	MAX ALT GROSS WT 4000'/95F	FERRY MISSION STD DAY
NO OF TROOPS/PAYLOAD	11	14	11	14			
2/ Estimated Gross Weight (lbs)	16700	17420	16700	17420	20250	20250	19500
Payload (Outbound) (lbs)	2640	3360	2640	3360	6195	6195	—
Payload (Inbound) (lbs)	0	0	0	0	3000	3000	—
Vmax (IRP) (kts)	157	156	156	155	128 4/	129 4/	149
Max Cruize Speed (MCP) (kts)	150	149	137	136	121 4/	105 4/	143
Vcruize (Best Range) (kts)	130	130	135	135	100 4/	105 4/	126
Max Rate-of-Climb (IRP-Vbroc) (fpm)	2735	2550	2010	1840	1645	1075	2045
Vert Rate-of-Climb (95% IRP) (fpm)	1515	1220	290	—	—	—	—
Service Ceiling (100 fpm) (ft)	18,000	17200	14000	13000	13700	9800	14600
Service Ceiling (Single Eng) (ft)	8700	7500	3600	2400	3000	—	4200
Hover Ceiling (Oge, IRP) (ft)	9800	8600	5000	4200	4800	—	5000
Hover Ceiling (2 ft Wheel Ht, IRP) (ft)	14800	13600	9200	8400	9600	4000	10400
3/ Radius of Action (nm)	106	105	133	133	90 4/	110 4/	
Ferry Range (nm)							950

1/ Performance with IR Suppressor Installed.
2/ Empty Wt - 10680 lbs. Fixed Useful Load with Crew of 3 - 935 lbs
3/ 8 Min Ground Time, 1 Min Hover, Climbout, Vcruise, 5 Min Noe at 40 Kts & Return with 30 Minute Reserve.
4/ Outbound Payload is External 30ft^2 Equivalent Flat Plate Area

Source: AVRADCOM - DRCPM-BH

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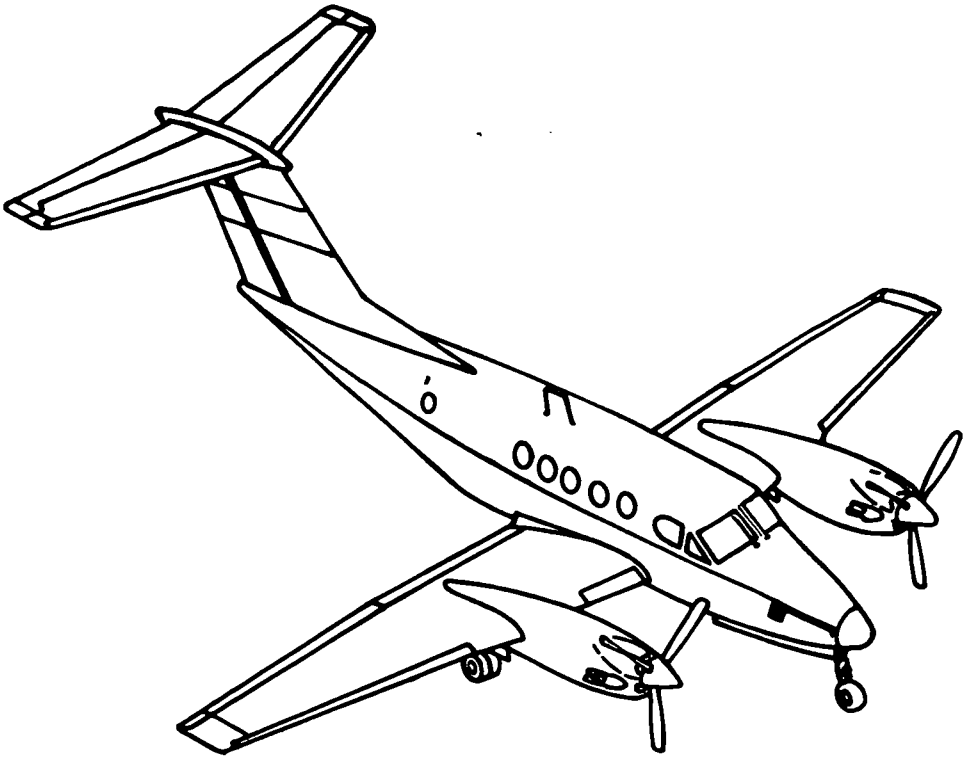


Figure 1-35. C-12A, C & D (Huron)

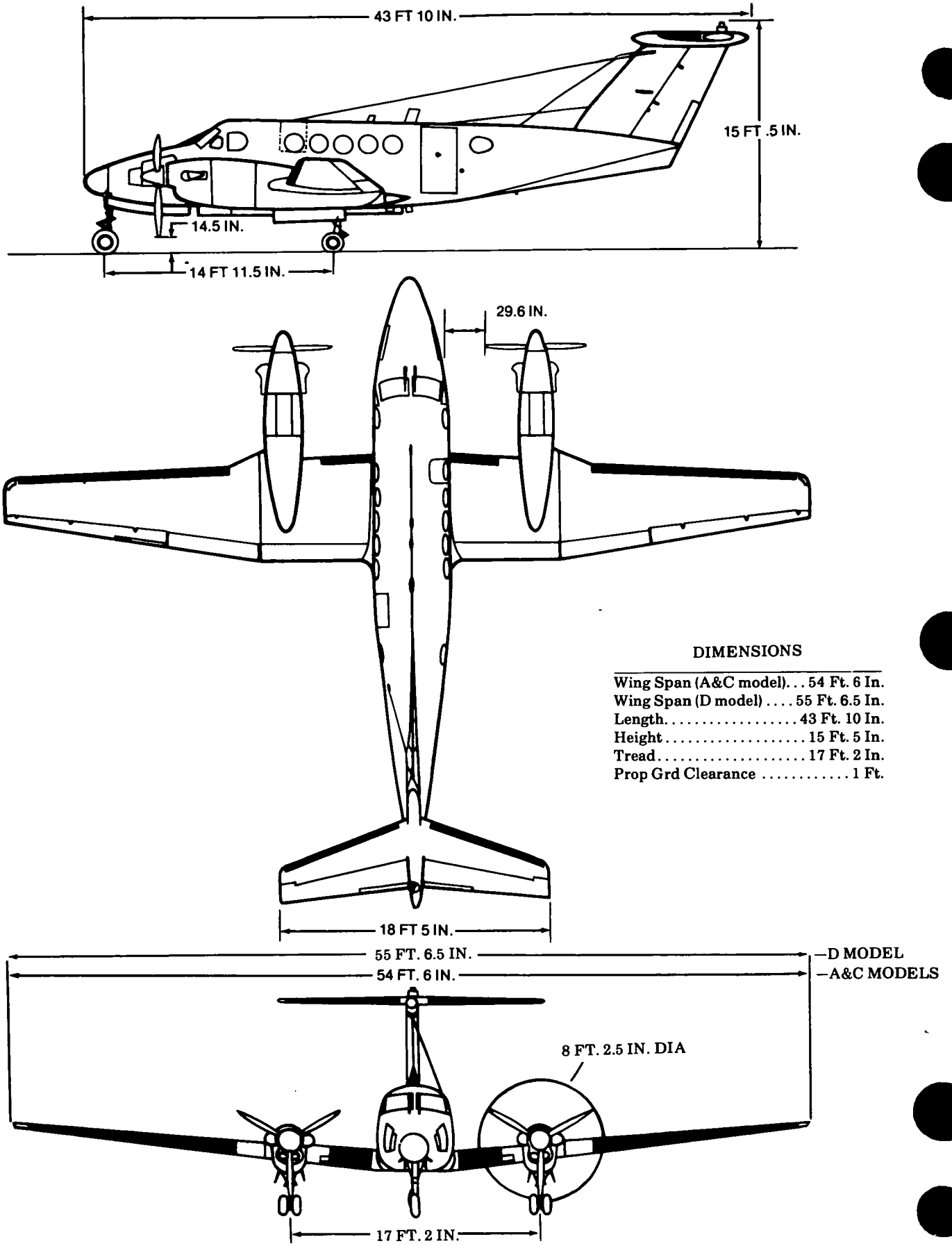


Figure 1-36. Principal Dimensions, C-12A, C & D (Huron)

1-60. C-12A, C & D (Huron) Characteristics.

ENGINE

No. and Model C-12A..... (2) PT6A-38
No. and Model C-12C&D .. (2) PT6A-41
Mfr..... UACL
Type..... Turbo Prop
Prop Mfg..... Hartzell
Prop Type..... C5
No. Blades 3
Prop Dia..... 8 Ft. 2½ In.

ENGINE RATINGS

C-12A TAKEOFF SHP 750 ALT SL
C-12C&D TAKEOFF SHP 850 ALT SL

TECHNICAL PUBLICATIONS

AIRFRAME:
TM 55-1510-218-10
Commercial Manuals
(Contractor Supported)

ENGINE:
Pratt and Whitney Commercial
Manuals

MISSION AND DESCRIPTION

Mfg. Model: Beech Aircraft Corp. A200

The C-12A, C & D are off-the-shelf utility aircraft which are totally contractor supported.

The C-12A, C & D are all metal twin turbo prop engine, fixed wing, pressurized cabin, passenger/cargo carrying aircraft. The aircraft are designed and equipped for flight operations under Instrument Flight Rule (IFR) conditions day or night into high density air traffic control zones and into known icing weather conditions.

DEVELOPMENT

Date of contract ..... Aug 1974
First flight (similar aircraft)..... TSARCOM
First aircraft delivered ..... Sep 1975

FEATURES

All Metal
T-Tail
Retractable Tricycle with
Dual Main Wheel
Dual Side-by-Side
Flight Controls

PERSONNEL

Crew 2
Passengers..... 8

WEIGHTS

LOADING	LB.
Empty	
Basic	
Design.....	12,500
Clean	
Light Scout	
Heavy Scout	
Hog	
Max. Takeoff	
Max. Landing	12,500

FUEL AND OIL

Fuel:
Grade ..... JP 4/5
Spec..... MIL-T-5624
No. tanks 12
Location..... 10 Wing
2 Nacelle
Qty ..... 386 (544 w/
Aux Tanks)
Oil:
Spec..... MIL-L-23699
No. tanks..... 2
Location ..... Nacelle
Qty..... 3.5 Gal Each Tank

AVIONICS/ARMAMENT

Refer to Chapter 2.

UNIT PRICE/NSN

NSN 1510-01-005-5461

UNIT PRICE: Refer to
Table 4-2.

1-61. Performance — Typical Mission, C-12A, C & D (Huron).

	A Model	C & D Models
Payload ..... (lb)	4764	4391
Range ..... (nmi)	@31,000 1177 Aux Tanks 1780	1755
Cruise Speed ..... (kn)	@25,000 241 31,000 222	
Max Speed ..... (kn)	270	260
Min Takeoff Distance ..... (ft)	3824	2200
Min Landing Distance ..... (ft)	2620	
Rate of Climb (1 Eng) ..... (fpm)	602	700
Service Ceiling (2 Eng) ..... (ft)	30,400	31,000
Service Ceiling (1 Eng) ..... (ft)		

SOURCE: TSARCOM-DRSTS-WP

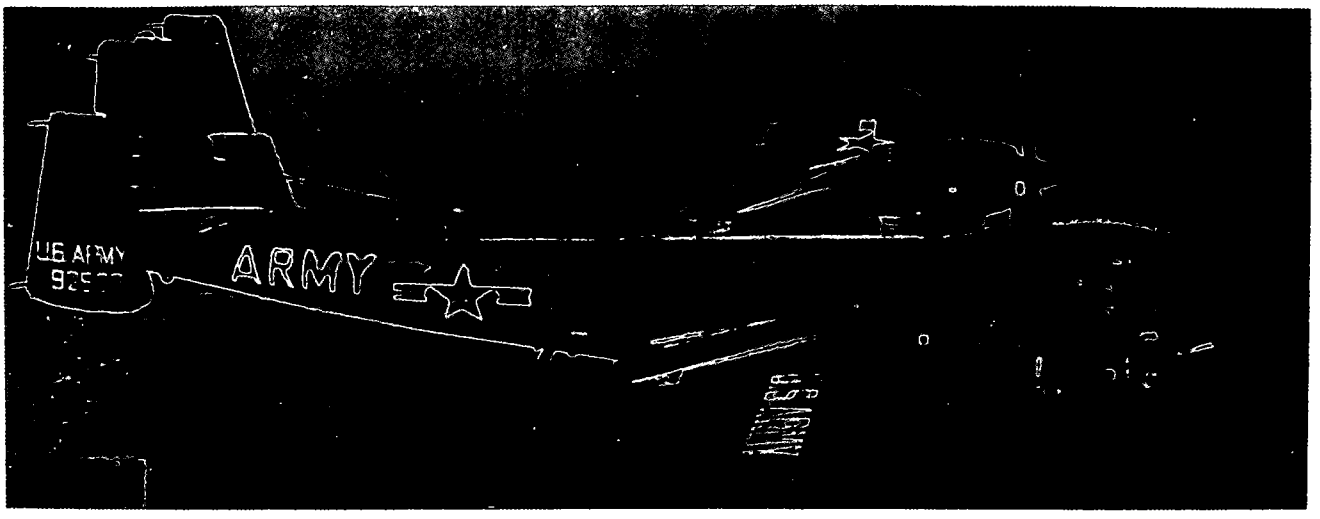
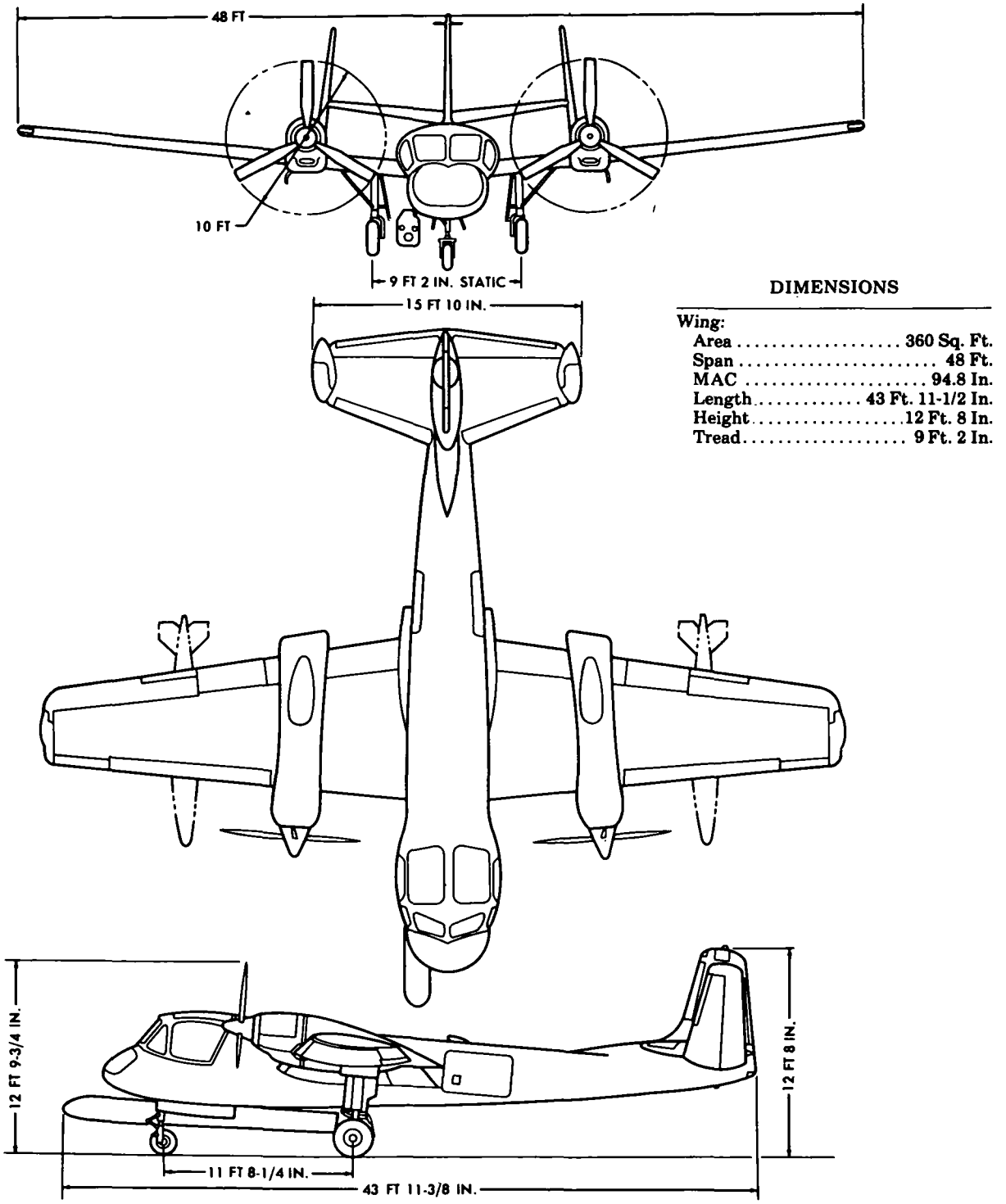


Figure 1-37. OV-1 (Mohawk)



DIMENSIONS

Wing:	
Area	360 Sq. Ft.
Span	48 Ft.
MAC	94.8 In.
Length	43 Ft. 11-1/2 In.
Height	12 Ft. 8 In.
Tread	9 Ft. 2 In.

Figure 1-38. Principal Dimensions, OV-1B (Mohawk)

1-62. OV-1B (Mohawk) Characteristics.

ENGINE

No. & model .... (2) T53-L-7A
Mfr ..... Lycoming
Type ..... Free power turbine
Engine spec No .. 104.21C
Red. gear ratio ... 12.4
Prop mfr ..... Ham std
Blade design No . 7125-6
No. of blades ... 3
Prop dia ..... 10 ft

ENGINE RATINGS

Rating/SL	SHP	SFC	Output RPM
Max (takeoff)	1100	0.670	1700
Mil	1000	0.679	1700
NRP	900	0.692	1700

TECHNICAL PUBLICATION

AIRFRAME:
TM 55-1510-204-10/3
TM 55-1510-204-CL/3
TM 55-1510-204-23-1
TM 55-1510-204-23-2
TM 55-1510-204-23-3
TM 55-1510-204-23-4
TM 55-1510-204-23P-1
TM 55-1510-204-23P-2
TM 55-1510-204-23P-3
TM 55-1510-217-L
TM 55-1510-217-PM
TM 55-1510-217-PMD
TM 55-1510-217-S

ENGINE:
TM 55-2840-233-24
TM 55-2840-233-23P

MISSION AND DESCRIPTION

Mfr's Model: Grumman

The primary mission of the OV-1B is electronic surveillance using the sidelooking airborne radar (SLAR). In addition, it is capable of performing missions of photographic reconnaissance, visual reconnaissance and observation, artillery gunfire spotting, and air control.

The OV-1B is a two-place, twin-turboprop aircraft capable of operating from improved runways. Design features include a midwing, three-tail configuration of semimonocoque construction equipped with wide span flaps.

The crew of two are seated side-by-side within a bubbled enclosure at the extreme forward end of the fuselage.

A remotely operated day-and-night KA-30 camera installation provides horizon-to-horizon photo coverage along the aircraft flight path.

The OV-1B carries an APS-94 side looking airborne radar antenna as standard equipment.

External provisions are incorporated to carry two 150-gallon fuel tanks or two resupply containers.

DEVELOPMENT

First flight (prototype) ..... November 1961
Estimated first service use ..... January 1963

FEATURES

Ejection Seats
Low Physical Profile
All Weather Operation Capability
Capable of Deployment to Distant MSN Area by Using Extended Range Tanks (300 gal)

PERSONNEL

Pilot..... 1
Mission Operator 1

WEIGHTS

	LB	L.F.
Empty E	10,983	
Basic	11.217	
Design	13,100	4.0
Combat (basic mission)	12,882	
Normal takeoff .	13,654	
Max takeoff ...	16,643	
Max landing ...	16,643	

FUEL AND OIL

Fuel:
Grade JP-4
Spec MIL-T-5624

No. tanks:
Fuselage .... (1) 297 gal
External .... (2) 150 gal
Total Qty ... 597 gal

Oil:
Spec MIL-L-23699
Qty ..... 5 gal

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1510-00-715-9379

LIN A30221
UNIT PRICE: See Table 4-2.

1-63. Loading and Performance — Typical Mission, OV-1B (Mohawk)

TAKEOFF LOADING CONDITION	OBSERVATION, NO STORES 1	NIGHT PHOTO, TWO A6 EJECTORS 3	EMERGENCY RESUPPLY, TWO RESUPPLY CONTAINERS 5	FERRY, TWO 150-GAL EXT TANKS 7
TAKEOFF WEIGHT (lb)	13,654	13,915	15,168	15,918
Fuel internal/external (lb)	1930/0	1930/0	1930/0	1930/1950
Payload (lb)	....	264	1500	....
Wing loading (lb/sq ft)	38	38.7	42.1	44.6
Stall speed (power-off) 4/ (kn)	73	73.8	77	79
Takeoff run at SL – calm (ft)	1140	1230	1520	1650
Takeoff to clear 50 ft – calm (ft)	1660	1800	2170	2320
Max speed/altitude 1/ (kn/ft)	240.5/12,500	238/12,000	226.8/10,000	226/8000
Rate of climb at SL 2/ (fpm)	2800	2700	2320	2160
Time: SL to 20,000 ft 2/ (min)	9.5	10	13	15
Time: SL to 25,000 ft 2/ (min)	15.5	16	23	26.5
Service ceiling (100 fpm) 2/ (ft)	29,500	28,750	26,500	24,900
COMBAT RANGE 3/ (nmi)	365	358	334	1053
Average cruising speed (kn)	200	200	200	203
Cruising altitude (s) (ft)	5000	5000	5000	20,000
Cruise time (hr)	1.80	1.77	1.64	4.98
Mission time (hr)	1.84	1.80	1.69	5.30
COMBAT LOADING CONDITION	**NO STORES 2**	**TWO A6 EJECTORS 4**	**TWO RESUPPLY CONTAINERS 6**	
COMBAT WEIGHT (60 percent internal fuel) (lb)	12,882	13,143	14,396	....
Engine power	Military	Military	Military	....
Fuel (lb)	1158	1158	1158	....
Combat speed/combat altitude 2/ (kn/ft)	250/5000	248/5000	238/5000	....
Rate of climb/combat altitude 2/ (fpm/ft)	2660/5000	2560/5000	2175/5000	....
Combat ceiling (500 fpm) 2/ (ft)	27,700	26,900	23,800	....
Rate of climb at SL 2/ (fpm)	3050	2940	2530	....
Max speed at SL 2/ (kn)	247.2	244.9	235.9	....
Max speed/altitude 2/ (kn/ft)	252/11,500	249.5/11,500	239.5/10,000	....
LANDING WEIGHT (10 percent internal fuel) (lb)	11,917	12,178	13,431	....
Fuel (lb)	193	193	193	....
Stall speed-power-off/approach power 5/ (kn)	82/68	83/68	87/72	....
Landing distance clear 50-ft obstacle (ft)	1650	1740	1910	....

1-63. Loading and Performance — Typical Mission, OV-1B (Mohawk) (Con't).

1/ Normal rated power.

2/ Military rated power.

3/ See notes on mission specifications.

4/ Flight idle power, propeller control at max rpm.

5/ Power for level flight at 120 percent of stall speed, power off, propeller control at max rpm.

Source: TSARCOM-DRCPM-AEL

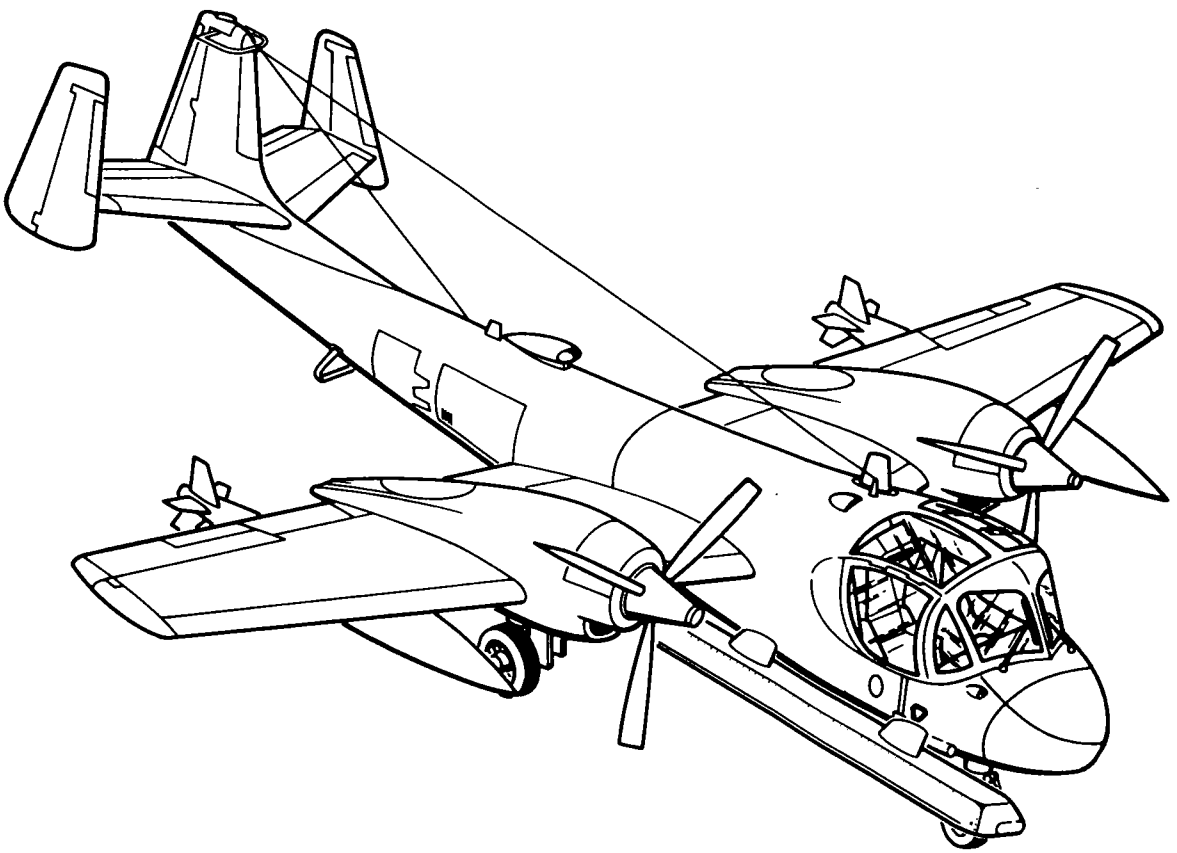
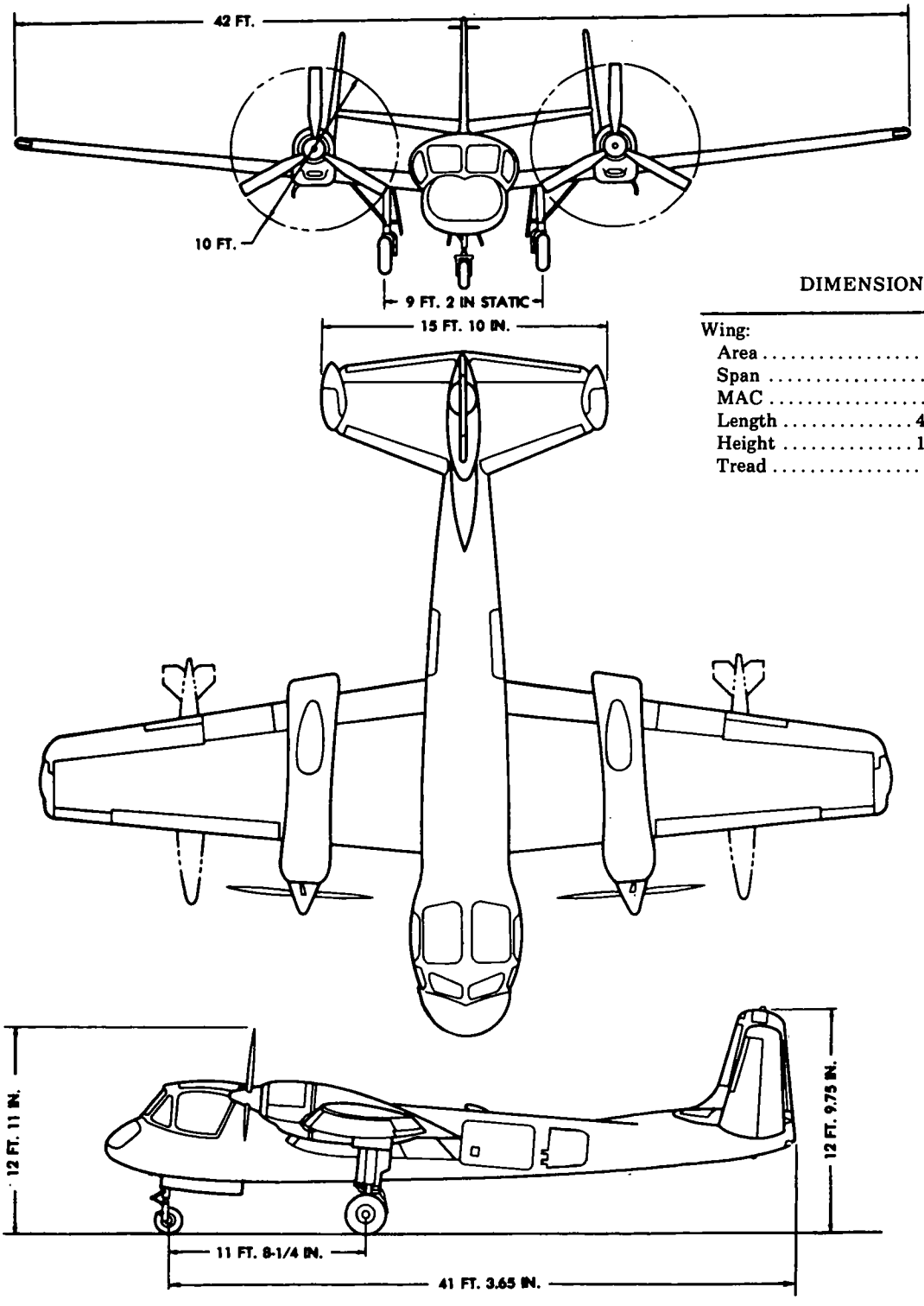


Figure 1-39. OV-1C (Mohawk) Aircraft



DIMENSIONS

Wing:	
Area	330 Sq. Ft.
Span	42 Ft.
MAC	98 In.
Length	41 Ft. 3.65 In.
Height	12 Ft. 9.75 In.
Tread	9 Ft. 2 In.

Figure 1-40. Principal Dimensions, OV-1C (Mohawk)

1-64. OV-1C (Mohawk) Characteristics.

ENGINE

No. & model .... (2)T53-L-7A
Mfr ..... Lycoming
Type ..... Power free turbine
Engine spec No. 104.11C
Red. gear ratio 12.46
Prop mfr ..... Ham std
No. blades 3
Blade design No. 7125-6
Prop dia ..... 10 ft

ENGINE RATINGS

T53-L-7A

Rating/SL	SHP	SFC	Output RPM
Max (takeoff)	1100	0.670	1700
Mil	1000	0.679	1700
NRP	900	0.692	1700

TECHNICAL PUBLICATION

AIRFRAME:
TM 55-1510-204-10/4
TM 55-1510-204-CL/3
TM 55-1510-204-CL/4
TM 55-1510-204-23-1, -2, -3, -4
TM 55-1510-204-23P-1, P-2, P-3
TM 55-1510-217-L
TM 55-1510-217-PM
TM 55-1510-217-PMD
TM 55-1510-217-S
ENGINE
TM 55-2840-233-24
TM 55-2840-233-23P

MISSION AND DESCRIPTION

Mfr's Model: Grumman

The primary mission of the OV-1C is to perform Infrared (IR) reconnaissance missions using the Infrared sensor. In addition it is capable of performing photographic missions, visual reconnaissance and observation, artillery gunfire spotting and air control.

The OV-1C is a two-place, twin turboprop aircraft capable of operating from improved runways. Design features include a midwing, three-tail configuration of semi-monocoque construction equipped with wide span flaps.

The crew of two are seated side-by-side within a bubbled enclosure at the extreme forward end of the fuselage.

A remotely operated day-and-night KA-30 or KA-76 camera installation provides horizon-to-horizon photo coverage along the aircraft flight path. A nose-mounted KA-60, 70-mm panoramic camera is also provided.

The OV-1C carries AN/AAS-14 infrared detection equipment. An LS-59A Flasher Pod maybe installed externally. The infrared surveillance system makes it possible to detect military terrestrial targets by inherent characteristics that are distinguishable in the visual and infrared portion of the electromagnetic spectrum.

External provisions are incorporated to carry two 150-gallon fuel tanks or two resupply containers.

DEVELOPMENT

First flight (prototype) ..... March 1961
First service use ..... July 1961

FEATURES

Ejection Seats
Low Physical Profile
All Weather Operation Capability

Capable of Deployment to Distant MSN Area by Using Extended Range Tanks (300 gal)

PERSONNEL

Pilot 1
Mission Operator 1

WEIGHTS

	LB	L.F.
Empty	10,011	
Basic	10,379	
Design	11,924	4.9/4.0
Combat (basic mission)	12,296	
Normal takeoff	12,682	
Max takeoff	15,302	
Max landing	15,302	

FUEL AND OIL

Fuel:
Grade JP-4
Spec MIL-T-5624
No. tanks:
Fuselage .... (1) 297 gal
External .... (2) 150 gal
Total qty ..... 597 gal
Oil:
Spec MIL-L-23699
Qty ..... 5 gal

AVIONICS / ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1510-00-715-9380
LIN A30271
UNIT PRICE: See Table 4-2.

1-65. Loading and Performance — Typical Mission, OV-1C (Mohawk).

TAKEOFF LOADING CONDITION	OBSERVATION NO STORES 1	NIGHT PHOTO, TWO A6 EJECTORS 3	EMERGENCY RESUPPLY TWO RESUPPLY CONTAINERS 5	FERRY, TWO 150-GAL EXT TANKS 7
TAKEOFF WEIGHT (lb)	12,682	12,943	14,197	14,961
Fuel (lb)	1930	1930	1930	3880
Payload (lb)	....	264	1500	....
Wing loading (lb/sq ft)	38.4	39.2	43.0	45.3
Stall speed (power-off) 4/ (kn)	72	73	76	77
Takeoff run at SL – calm 6/ (ft)	1080	1110	1400	1560
Takeoff run at SL – 25-kn wind 6/ (ft)	810	833	1050	1150
Takeoff to clear 50 ft - calm 6/ (ft)	1640	1680	2000	2230
Max speed/altitude 1/ (kn/ft)	246/10,000	243/10,000	229/5000	230/SL
Rate of climb at SL 1/ (fpm)	2270	2175	1800	1630
Time: SL to 20,000 ft 1/, 2/ (min)	14/12	15/13	22/17	27/22
Time: SL to 25,000 ft 1/, 2/ (min)	24/20	27/22	47/35	64/47
Service ceiling (100 fpm) 1/, 2/ (ft)	26,200/27,450	25,700/26,500	21,600/23,200	20,200/21,300
COMBAT RANGE 3/ (nmi)	408	397	362	1081
Average cruising speed (kn)	200	200	200	215
Cruising altitude(s) (ft)	5000	5000	5000	20,000
Cruise time (hr)	2.01	1.96	1.78	4.72
Mission time (hr)	2.05	2.00	1.83	5.17

COMBAT LOADING CONDITION	NO STORES 2	TWO A6 EJECTORS 4	TWO RESUPPLY CONTAINERS 6	
COMBAT WEIGHT (60 percent internal fuel) (lb)	11,910	12,171	13,425	....
Engine power	Military	Military	Military	....
Fuel (lb)	1158	1158	1158	....
Combat speed/combat altitude 2/ (kn/ft)	256/5000	252/5000	240/5000	....
Rate of climb/combat altitude 2/ (fpm/ft)	2100/5000	2000/5000	1620/5000	....
Combat ceiling (500 fpm) 2/ (ft)	25,200	24,300	20,400	....
Rate of climb at SL 2/ (fpm)	2880	2780	2320	....
Max speed at SL 2/ (kn)	255	252	239	....
Max speed/altitude 2/ (kn/ft)	256/10,000	253/10,000	240/5000	....
LANDING WEIGHT (10 percent internal fuel) (lb)	10,945	11,206	12,460	
Fuel (lb)	193	193	193	....
Stall speed-power off 4/ /approach power 5/ (kn)	82/70	84/70	87/73	....
Landing distance to clear 50-ft obstacle (ft)	1800 7/	1840 7/	2000 8/	....

1-65. Loading and Performance — Typical Mission, OV-1C (Mohawk) (Con't).

1/ Normal rated power.

2/ Military rated power.

3/ See notes on mission specifications.

4/ Flight idle power, propeller control at max rpm.

5/ Power for level flight at 120 percent of stall speed, power off, propeller control at max rpm.

6/ Takeoff distances are based on takeoff and obstacle speed equal to 120 percent of power-off stall speed in takeoff configuration.

7/ Landing distance is based on approach speed equal to 110 percent of landing stall speed with rate of sink equal to 14 fps.

8/ Landing distance is based on approach speed equal to 110 percent of landing stall speed, power off, with rate of sink equal to 8 fps.

1-66. Performance Notes, OV-1B and C (Mohawk).

TACTICAL AIR OBSERVATION MISSION AND NIGHT PHOTOGRAPHY (Columns 1, 3, and 5, paragraphs 1-63 and 1-65.

Warm up, taxi, take off, clumb on course to 5000 feet at normal rated power, and cruise at 200 knots at 5000 feet until all but reserve fuel is consumed. Range-free allowances are 5 minutes at normal rated power for warmup, taxi, and take off, plus 10 percent of initial internal fuel for reserve.

FERRY MISSION (Column 7, paragraphs 1-63 and 1-65).

Warm up, taxi, take off, climb on course to altitude for maximum range at normal rated power, cruise at altitude and velocity for maximum range until all but reserve fuel is consumed, and drop external fuel tanks when empty. Range-free allowances ar 5 minutes at normal rated power for warmup, taxi, and take off, plus 10 percent of initial fuel for reserve.

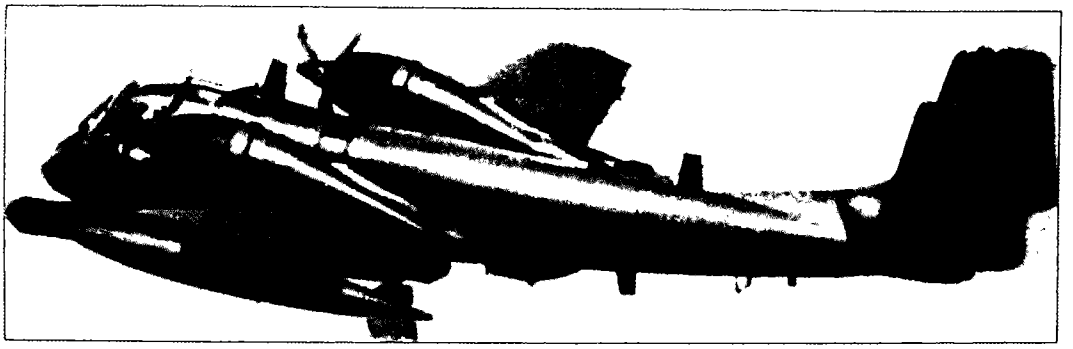
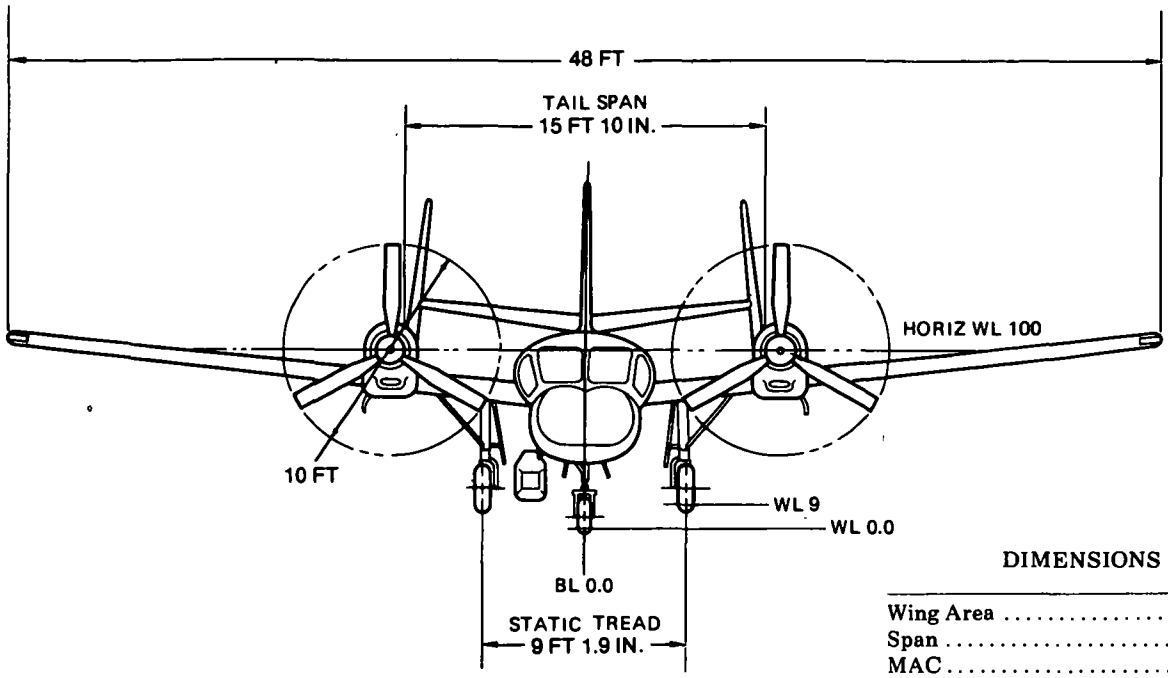


Figure 1-41. OV-1D (Mohawk)



DIMENSIONS

Wing Area	360 Sq. Ft.
Span	48 Ft.
MAC	98 In.
Length	41 Ft. 3.65 In.
Height	12 Ft. 8 In.
Tread	9 Ft. 2 In.

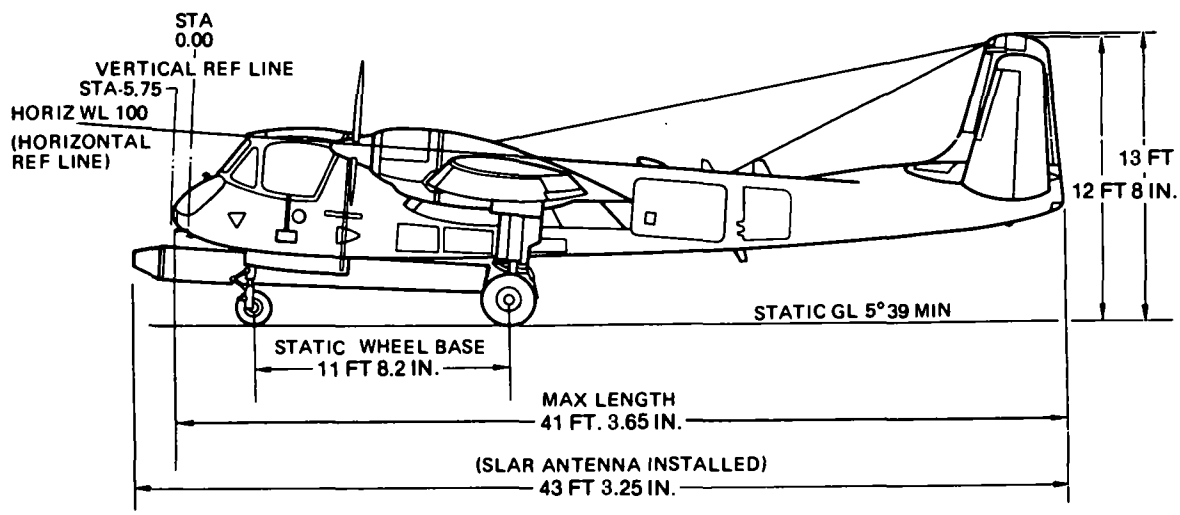


Figure 1-42. Principal Dimensions, OV-1D (Mohawk)

1-67. OV-1D (Mohawk) Characteristics.

ENGINE

No. & model	(2)T53-L-701A
Mfr	Lycoming
Type	Free power Turbine
Engine spec No	104.39
Red. gear ratio	12.38
Prop mfr	Ham std
Blade design No	5157C-6
No of blades	3
Prop dia	10 ft

ENGINE RATINGS

T53-L-701A Rating/SL	SHP	Output SFC	RPM
MIL	1400	.590	1650
NRP	1250	.610	1590

TECHNICAL PUBLICATIONS

AIRFRAME:
- TM 55-1510-213-10 & 10-1
- TM 55-1510-213-CL
- TM 55-1510-213-23-1, -2, -3
- TM 55-1510-204-23P-1, P-2, P-3
- TM 55-1510-217-L
- TM 55-1510-217-PMD
- TM 55-1510-217-PM
- TM 55-1510-213-MTF
- TM 55-1510-200-S

ENGINE:
- TM 55-2840-233-24
- TM 55-2840-233-23P

MISSION AND DESCRIPTION

The primary mission of the OV-1D is to perform either infrared (IR) reconnaissance or side looking airborne radar (SLAR) missions. The SLAR and IR are interchangeable. In addition, it is capable of performing photographic missions, visual reconnaissance and observation, artillery gunfire spotting and air control. The OV-1D is a two-place, twin turboprop aircraft capable of operating from improved runways. Design features include a mid-wing, three-tail configuration of semimonocoque construction equipped with wide span flaps.

The crew of two are seated side-by-side within a bubbled enclosure at the extreme forward end of the fuselage.

The OV-1D is equipped with three independent photographic systems, all of which have automatic exposure controls and can be operated by either the pilot or observer.

External provisions are incorporated to carry two 150-gallon fuel tanks, two ECM pods, or LS 59A photo flasher.

FEATURES

Ejection Seat's
Low Physical Profile
All weather operation capability
Capable of deployment to distant msn area by using extended range tanks (300 gal)

PERSONNEL

Pilot	1
Mission Operator	1

WEIGHTS

Refer to Loading and Performance Chart. (Par 1-71)

FUEL & OIL

Fuel	
Grade	JP-4/5
Spec	MIL-T-5624
No. tanks	
Fuselage	(1) 297 gal
External	(2) 150 gal
Total qty	597 gal
Oil:	
Spec	MIL-L-23699
Qty	5 gallon

AVIONICS/ARMAMENT

Refer to Chapter 2.

UNIT PRICE/NSN

NSN 1510-00-869-3654
LIN A30296
UNIT PRICE: See Table 4-2.

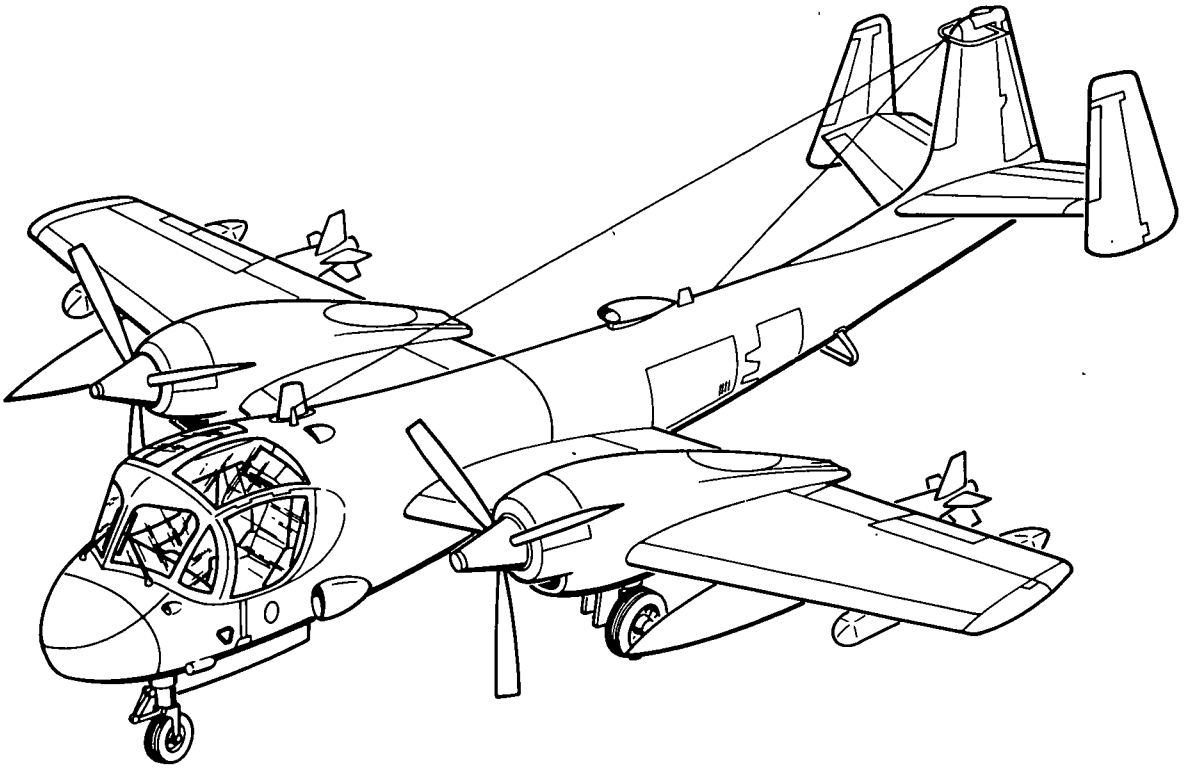


Figure 1-43. RV-1D (Mohawk)

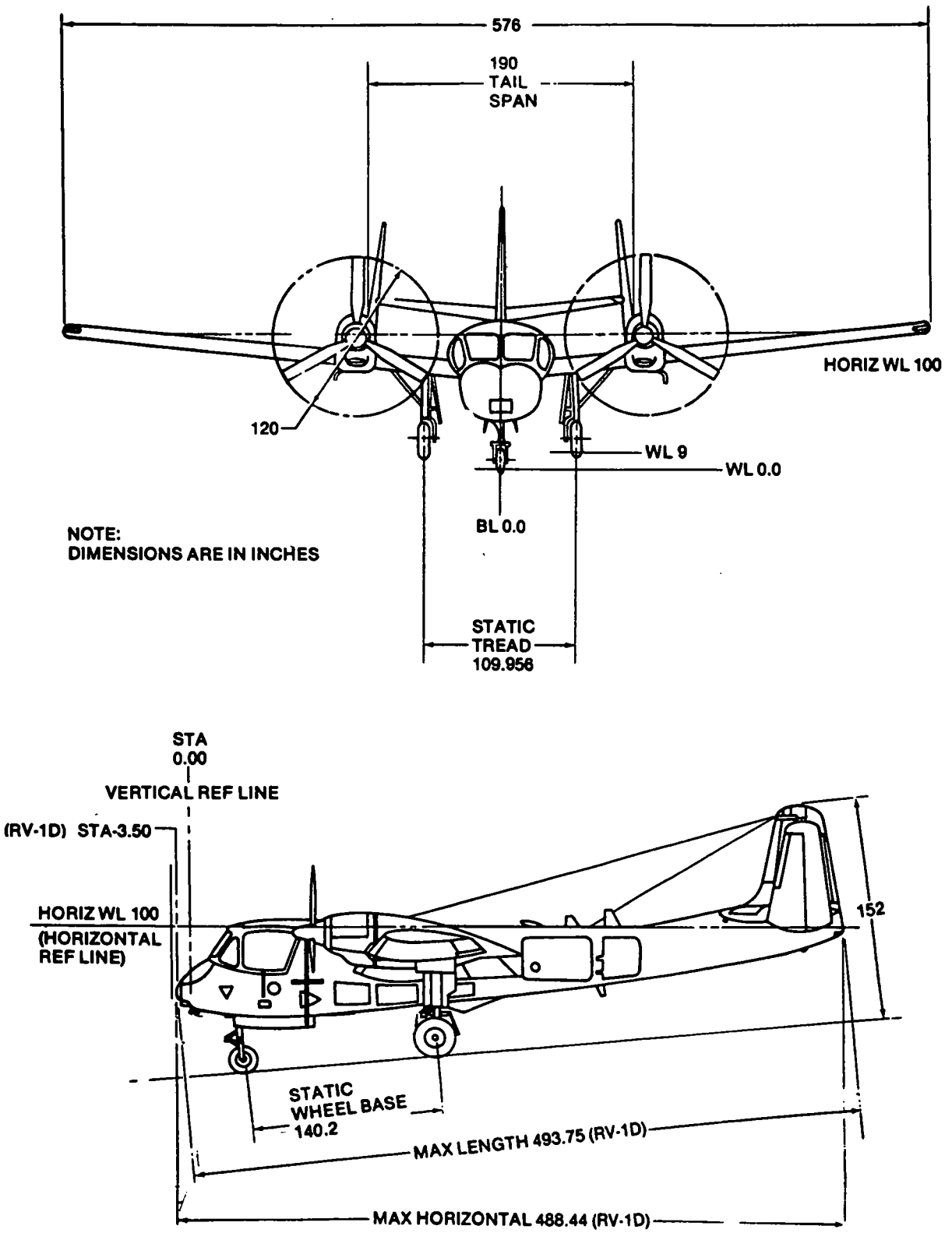


Figure 1-44. Principal Dimensions, RV-1D (Mohawk)

1-68. RV-1D (Quick Look).

ENGINE

No. & model..... (2)T53-L-701A
Mfr ..... Lycoming
Type..... Free power Turbine
Engine spec No..... 104.39
Red. gear ratio..... 12.38
Prop mfr..... Ham std
Blade design No..... 5157C-6
No. of blades 3
Prop dia..... 10ft

ENGINE RATINGS

T53-L-701A		Output	
Rating/SL	**SHP**	**SFC**	**RPM**
MIL	**1400**	**.590**	**1650**
NRP	**1250**	**.610**	**1590**

TECHNICAL PUBLICATIONS

AIRFRAME:
TM 55-1510-213-10 & 10-1
TM 55-1510-213-CL
TM 55-1510-213-23-1, -2, -3
TM 55-1510-204-23P-1, P-2, P-3
TM 55-1510-217-L
TM 55-1510-217-PM
TM 55-1510-217-PMD
TM 55-1510-213-MTF
TM 55-1510-217-S
ENGINE:
TM 55-2840-233-24
TM 55-2840-233-23P

MISSION AND DESCRIPTION

The Quick Look II system provides an electronic location and identification capability operation in tactical environment. The RV-1D is a two-place, twin turboprop aircraft capable of operating from unimproved runways. Design features include a mid-wing, three-tail configuration of semimonocoque construction. Large are flaps and droop ailerons are installed for added lift/drag requirements.

DEVELOPMENT

Date of contract..... Jul 75
Contracting agency ..... Grumman & UTL
No. of test aircraft 2
First flight scheduled ..... Mar 77
Completion of test & eval DT/OT III..... 15 Nov 77
Follow on tests..... 30 Apr 78
Contract delivery schedule ..... Jul 77

FEATURES

Ejection Seat's
Low Physical Profile
All weather operation capability
Capable of deployment to distant msn area by using extended range tanks (300 gal)

PERSONNEL

Pilot..... 1
Mission Operator 1

WEIGHTS

Refer to Loading and Performance Chart. (Par 1-71)

FUEL & OIL

Fuel
Grade..... JP-4/5
Spec..... MIL-T-5624
No. tanks
Fuselage..... (1) 297 gal
External..... (2) 150 gal
Total qty ..... 597 gal
Oil:
Spec MIL-L-23699
Qty ..... 5 gallon

AVIONICS/ARMAMENT

Refer to Chapter 2.

UNIT PRICE/NSN

NSN 1510-00-368-8440
LIN A30 444
UNIT PRICE: Refer to Table 4-2.

1-69. Loading and Performance — Typical Mission RV-1D (Mohawk).

TAKEOFF LOADING CONDITION		MAX GROSS WT. WITH AN/ALQ 133 AND AN/USQ 61 NO EXT FUEL TANKS	MAX GROSS WT. WITH AN/ALQ 133 AND AN/USQ 61 EXT FUEL TANKS
Take Off Weight	(lb)	15,532	17,482
Weight Empty	(lb)	11,905	11,905
Payload (useful) 9/	(lb)	3,027	5,577
Fuel (Internal)	(lb)	1,930	3,880
Stall Speed (Power Off) 4/	(kn)	78	83
Take Off Run at SL-Calm 6/15°C	(ft)	1,300	1,650
Take Off Run at SL-25 Kn Head Wind 6/15°C	(ft)	975	1,238
Take Off to Clear 50ft - Calm 6/15°C	(ft)	1,840	2,280
Max Speed/Altitude	(kn/ft)	215/5000	214/500
Rate of Climb at SL 1/	(fpm)	2,500	2,200
Timp: SL to 20,000 ft 1/2/	(min)	13/10	16/12
Time: SL to 25,000 ft 1/2/	(min)	22/17	29/22
Service Ceiling (100 fpm) 1/2/	(ft)	25,000	25,000
Combat Range 3/	(nm)	355—	710
Average Cruising Speed	(kn)	180	180
Cruise Altitude (5)	(ft)	5,000	5,000
Cruise Time 3/	(hr)	1.9	3.8
COMBAT LOADING CONDITION			
Combat Weight (60% Internal Fuel)	(lb)	14,760	16,710
Engine Power (Prop RPM, Eng Torque)	(rpm/%)	1678/100	1678/100
Fuel	(lb)	1158	3108
Rate of Climb/Combat Altitude	(fpm/ft)	1800/5000	1500/5000
Combat Ceiling (500 fpm)	(ft)	25,000	25,000
Landing Weight (10% Internal Fuel)	(lb)	13,795	13,795
Fuel	(lb)	193	193
Stall Speed-Power-Off 4/Approach Power 5/	(kias/kn)	90/75	97/80
Landing Distance to Clear 50ft Obstacle	(ft)	2,080 7/	2,500 8/

1-69. Loading and Performance — Typical Mission RV-1D (Mohawk) (Con't).

1/ Normal rated power.

2/ Military rated power.

3/ See Mission Type. Sample is based on:

a. 5000 ft altitude.
b. Standard day.
c. 180 knots CAS.
d. All stores installed.
e. Full external fuel, if installed.
f. Total fuel consumption, with 10% reserve remaining.
g. A total mission distance, from point of origin and return.

4/ Flight idle power, 0° -Bank, **15° flaps KIAS**

5/ Power for level flight at 120 per cent of stall speed, power-off, **15° flaps KT.**

6/ Takeoff distances are based on takeoff and obstacle speed equal to 120 per cent of power-off stall speed in takeoff configuration.

7/ Landing distance based on a ground and air distance total at sea level approach speed equal to 120 per cent of landing stall speed or a CAS of 90.5 knots, ambient temp or 20°C, 0 knot head wind and 12.2 FPS rate of sink.

8/ Landing distance based on a ground and air distance total, at sea level approach speed equal to 120 per cent of landing stall speed or a CAS of 98 knots, ambient temp of 20°C, 0 knot head wind and 12.2 FPS rate of sink.

9/ Fuel and mission essential equipment.

Source: TSARCOM-DRCPM-AEL

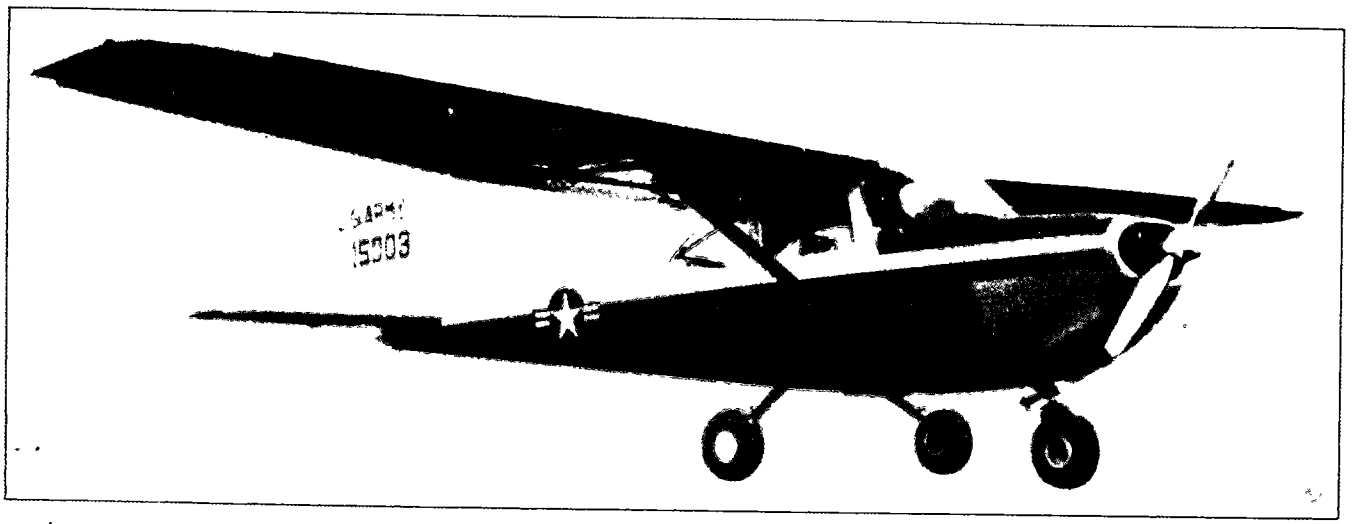
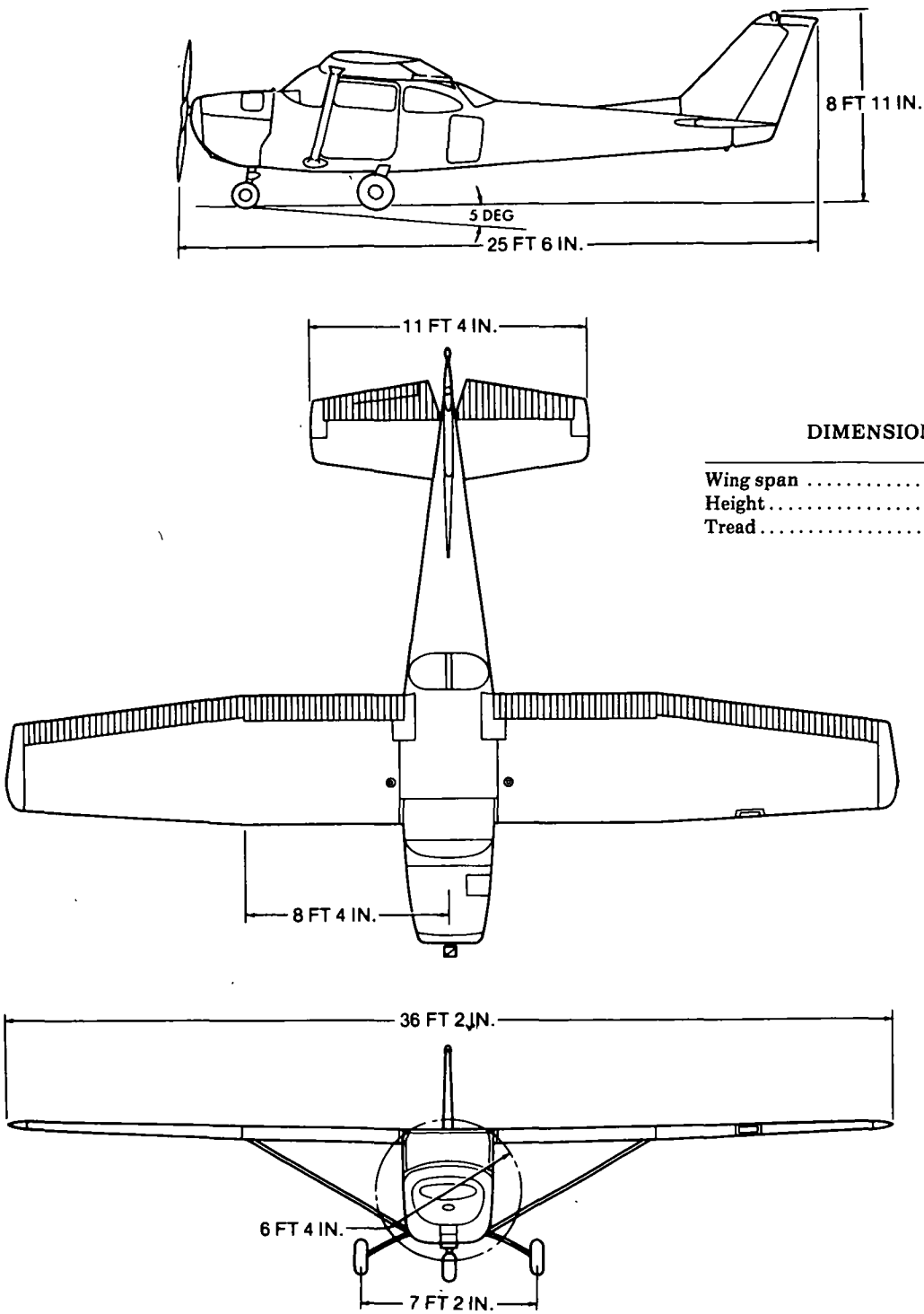


Figure 1-45. T-41B (Mescalero)



DIMENSIONS

Wing span	36 Ft. 2 In.
Height	8 Ft. 11 In.
Tread	7 Ft. 2 In.

Figure 1-46. Principal Dimensions, T-41B (Mescalero)

1-70. T-41B (Mescalero) Characteristics.

ENGINE

No. & model ..... (1) IO-360D
Mfr ..... Continental
Prop type ..... CS, VP
Prop dia ..... 6 ft, 4 in.

ENGINE RATING

	BHP	RPM
Takeoff	210	2800
Normal	210	2800

TECHNICAL PUBLICATIONS

AIRFRAME:
TM 55-1510-212-10
TM 55-1510-212-CL
Contractor Manuals
(Contractor Supported)

ENGINE:
Commercial Manual

MISSION AND DESCRIPTION

Mfr's Model: Cessna 172

The T-41B is an interim inventory fill to replace O-1 drawdown pending availability of the OH-6A. Missions include primary and advanced contact trainer and installation support roles. The T-41B will be used in two configurations as follows:

Utility mission – FAA normal category to include aircraft empty weight, including electronics, crew of two (instructor and student), at 200 pounds each, and fuel for endurance for 4.5 hours at 110 knots.

Normal mission – FAA normal category to include aircraft empty weight, including electronics, crew of one, two passengers, at 200 pounds each, and fuel for endurance for 4.5 hours at 110 knots.

DEVELOPMENT

Date of contract ..... 8 August 1966
First Production acft ..... October 1966

FEATURES

All metal.
High wing.
Fixed tricycle landing gear.
Dual side-by-side controls.

PERSONNEL

Crew 2
Instructor pilot 1
Student pilot 1
or
Crew 1
Passengers 2

WEIGHTS

	LB
Empty	1545
Utility	2200
Normal	2500

FUEL AND OIL

Fuel:
Grade 115/145
Spec MIL-G-5572
Qty ..... 52 gal
Oil:
Spec
Temps above
+40°F MHS-24A
(SAE 50)
Temps below
+40°F MHS-24A
(SAE 30)

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1510-00-929-1012
LIN A30052
UNIT PRICE: Refer to Table 4-2.

1-71. Performance — Typical Mission, T-41B (Mescalero).

Range (4.5 hours)	(mi)	590
Cruise speed 1/	(mph)	148
Max speed	(mph)	153
Takeoff distance	(ft)	635
Landing distance	(ft)	400
Rate of climb	(fpm)	910
Service ceiling	(ft)	17,500

1/ 75 percent power at 5500 feet.

Source: TSARCOM-DRSTS-WP

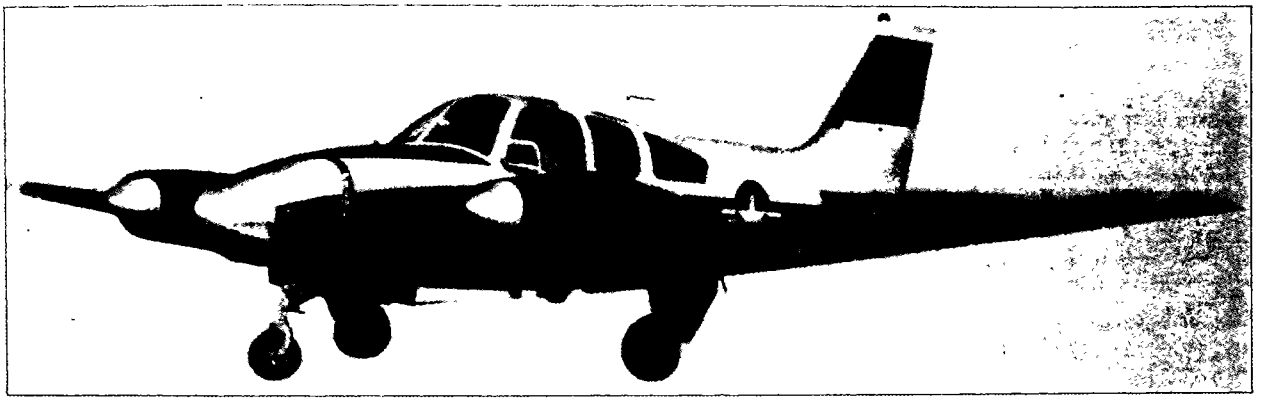
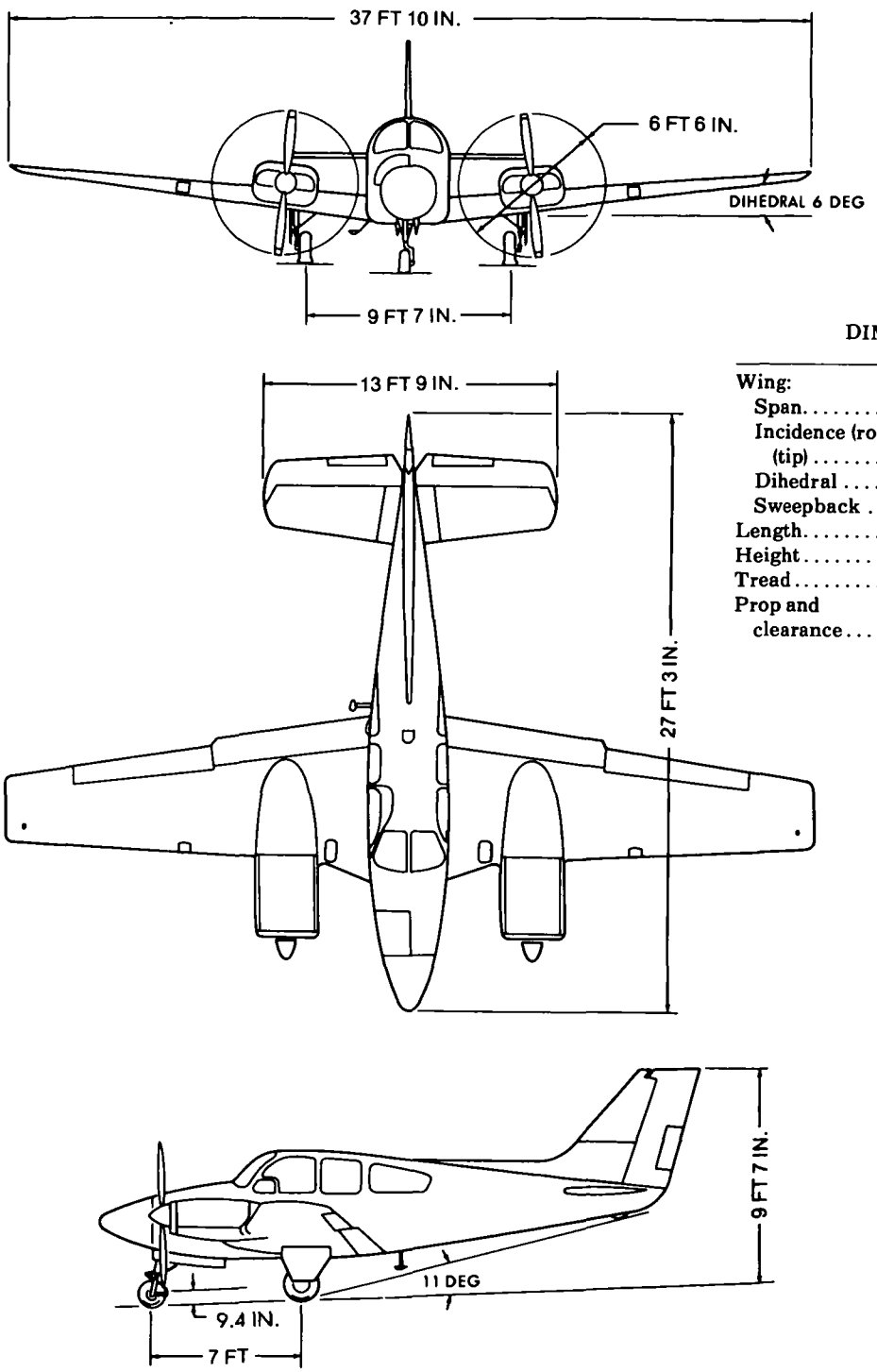


Figure 1-47. T-42A (Cochise)



DIMENSIONS

Wing:	
Span	37 Ft. 10 In.
Incidence (root)	4°
(tip)	1°
Dihedral	6°
Sweepback	0.0°
Length	27 Ft. 3 In.
Height	9 Ft. 7 In.
Tread	9 Ft. 7 In.
Prop and clearance	9.4 In.

Figure 1-48. Principal Dimensions, T-42A (Cochise)

1-72. T-42A (Cochise) (Characteristics).

ENGINE

No. & model .....(2) 10-470-L
Mfr.....Continental
Engine spec No.....1634-B
Prop mfr.....McCauley
Blade design No.....78FF-0
Prop type.....Hyd, CS, FF
Prop dia.....6 ft, 6 in.
No. blades.....2

ENGINE RATINGS

	BHP	RPM	ALT	MIN
Takeoff	260	2625	SL	Cont.
Normal	260	2625	SL	Cont.

TECHNICAL PUBLICATIONS

AIRFRAME:
TM 55-1510-208-10
TM 55-1510-208-20
TM 55-1510-208-23
TM 55-1510-208-23P
TM 55-1510-208-CL

ENGINE:
Commercial Manual

MISSION AND DESCRIPTION

Mfr's Model: Beech 95-B55B

The primary mission of the T-42A is the training of military pilots in instrument flying, in both day and night Instrument Flight Rule operations.

The secondary mission of the T-42A is twin-engine transition training of single engine rated pilots.

The T-42A is an all-metal, twin-engine, four place low wing monoplane, with retractable landing gear.

The cabin is designed to accommodate an instructor pilot and three student pilots. The instructor and primary student sit side-by-side; the two additional students sit immediately behind. The instructor and primary student each have a complete set of flight controls and instruments. The seating arrangement permits inflight movements of students from the forward primary seat to the rear seats.

Emergency evacuation is accomplished by quick-release jettison of windows on both sides of the windshield.

The warm air system is utilized for anti-icing, defrosting, and defogging of windshield.

DEVELOPMENT

Date of contract	February 1965
First flight	July 1965
First acceptance	August 1965
Production completed	June 1966

FEATURES

Cabin air conditioning, heating, and ventilation.
Cabin soundproofing.
Oxygen system.
Dual controls and instruments.
Steerable nose wheel.
Fuel injection.
Propeller anti-icing and wing and stabilizer deicing.
Rotating beacon.
Three-axis trim.

PERSONNEL

Crew	4
Instructor pilot	1
Student pilot	3
or	
Crew	1
Passengers	3

WEIGHTS

	LB	L.F.
Empty	3423	
Basic	3480	
Design	5100	+4.4, -3.0
Max takeoff	5100	do
Max	5100	do

FUEL AND OIL

Fuel:
Grade.....115/145
Spec.....MIL-G-5572
No. tanks.....4
Location.....Wing
Qty.....136 gal
Oil:
Spec
Temps above +40°F.....MHS-24A (SAE 50)
Temps below +40°F.....MHS-24A (SAE 30)
Location.....Engines
Qty.....6 gal

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1510-00-872-7908
LIN A30596 COSTS,
UNIT PRICE: Refer to Table 4-2.

1-73. Loading and Performance — Typical Mission, T-42A (Cochise).

TAKEOFF LOADING CONDITIONS		BASIC MISSION
Takeoff weight	(lb)	5,100
Fuel	(lb)	816
Payload	(lb)	—
Wing loading	(lbs/sq ft)	25.5
Stall speed [1]	(kn)	68
Stall speed [2]	(kn)	76.5
Takeoff run at SL	(ft)	910
Takeoff run to clear 50 ft	(ft)	1,255
Max speed SL	(kn)	205
Rate climb SL	(fpm)	1,670
Time SL to 10,000 ft	(min)	8
Service ceiling (100 FPM)	(ft)	19,700
LANDING WEIGHT		
(10% Fuel)		4,333
Fuel	(lb)	85
Ground roll at SL	(ft)	805
Landing distance to clear 50 ft obstacle	(ft)	1,580

[1] Zero thrust, flaps 28°, and gear down
[2] Power OFF, flaps up, and gear up

Source: TSARCOM-DRSTS-WP

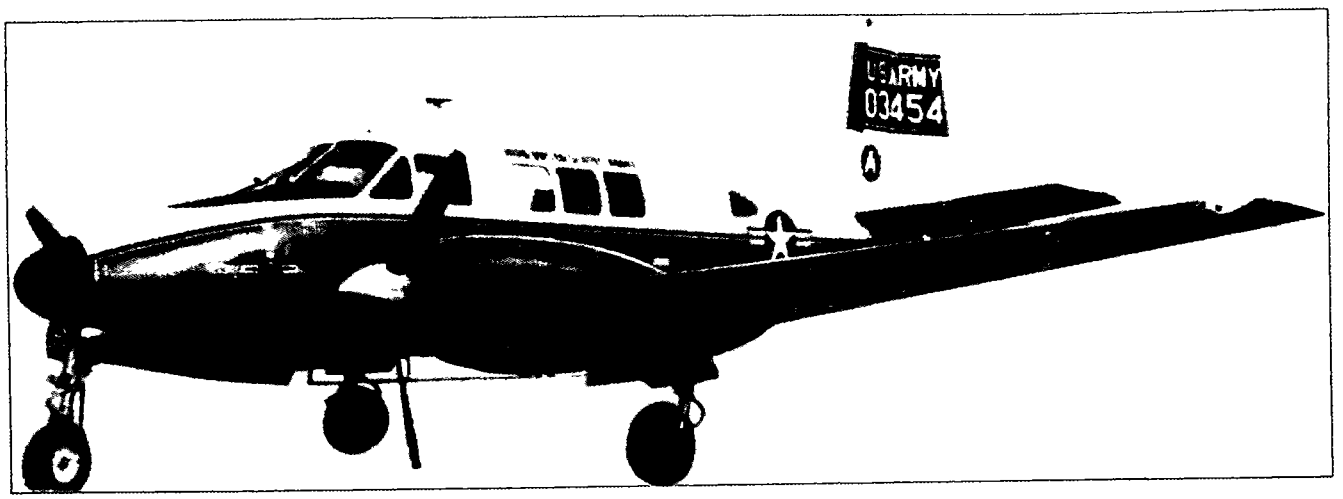
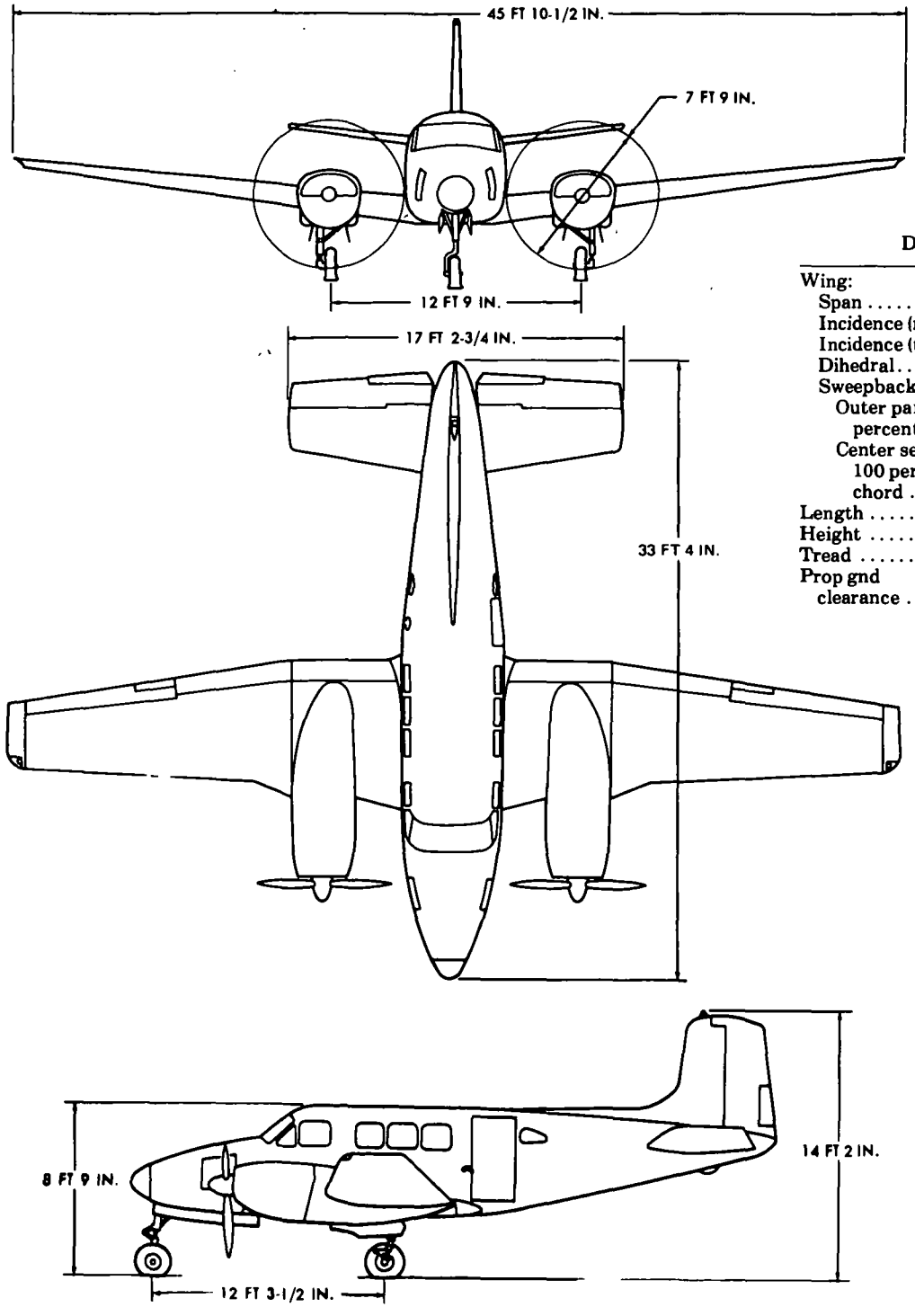


Figure 1-49. U-8F (Seminole)



DIMENSIONS

Wing:	
Span	45 Ft. 10-1/2 In.
Incidence (root)	4°, 48 min
Incidence (tip)	0.0°
Dihedral	7°
Sweepback:	
Outer panel 25 percent chord	0.0°
Center section 100 percent chord	0.0°
Length	33 Ft. 4 In.
Height	14 Ft. 2 In.
Tread	12 Ft. 9 In.
Prop gnd clearance	10-1/2 In.

Figure 1-50. Principal Dimensions, U-8F (Seminole)

1-74. U-8F (Seminole) Characteristics.

ENGINE

No. & model .... (2) 0-480-3A
Mfr ..... Lycoming
Engine spec No .. 2228
Superch ..... 1 stg, centrif
Red. gear ratio ... 77:120
Prop mfr ..... Hartzell
Blade design No .. 10151-B8
Prop type ..... Hyd, FF, CS
No. blades 3
Prop dia ..... 7 ft, 9 in.
Augmentation ... Fuel injection (3-piston type)

ENGINE RATINGS

	BHP	RPM	ALT	MIN
Takeoff	340	3400	SL	5
	340	3400	11,000	5
Normal	320	3200	SL	Cont.
	320	3200	11,000	Cont.

TECHNICAL PUBLICATIONS

AIRFRAME:
TM 55-1510-201-10/3 (D/F)
TM 55-1510-201-10/4 (D/G)
TM 55-1510-201-10/5 (F)
TM 55-1510-201-20 (D/F/G)
TM 55-1510-201-20P (D/F/G)
TM 55-1510-201-34P (D/F/G)
TM 55-1510-201-34P-1 (D/F/G)
TM 55-1510-201-34P-2 (D/F/G)
TM 55-1510-201-35 (D/F/G)
TM 55-1510-201-CL/4 (D/G)
TM 55-1510-201-CL/5 (F)
TM 55-1510-201-L (D/F/G)
TM 55-1510-201-MTF (F)
TM 55-1510-201-PMS (D/F/G)
TM 55-1510-201-S (D/F/G)

ENGINE:
TM 55-2810-218-10
TM 55-2810-281-34
TM 55-2810-218-34P

MISSION AND DESCRIPTION

Mfg. Model: Beech

The principal mission of the U-8F is the transportation of personnel.

The U-8F is a semimonocoque, low-wing monoplane easily converted into a cargo carrier by removing the passenger compartment seats.

The U-8F is similar to the U-8D except the larger fuselage is arranged with separate crew and passenger compartments. The crew compartment is arranged with the pilot's seat on the left and the copilot's seat on the right of a center aisle. It is equipped with dual flight controls and is separated from the passenger compartment with sliding doors. The passenger compartment is arranged with two passenger seats on the left and two or three passenger seats on the right of the center aisle. The track-mounted seats facilitate removal or installation and permit versatile seating arrangements. The baggage compartment is located at the rear of the passenger compartment with access from the passenger compartment. The cabin access door on the left side of the fuselage, aft of the wing, incorporates stair-type steps and may be opened or closed and locked from either the inside or outside. A jettisonable escape hatch is located opposite the cabin access door. Powerplants feature fuel injection and manually selected, electrically actuated inlet air source selection.

DEVELOPMENT

First flight ..... August 1958
First delivery ..... February 1959
Production completed ..... December 1962

FEATURES

Thermostatically controlled cabin heat.
Fresh air and oxygen outlets at each station.
Electrically actuated flaps.
Conventional flight controls, manually operated.
Steerable nose wheel.
Full feathering props.
Hydraulically controlled brakes.
Crossfeed fuel system.
Windshield wipers.
Deicing and anti-ice equipment.

PERSONNEL

Crew 1
Passengers 5
Baggage compartment:
Floor ..... 150 lb
Shelf ..... 150 lb

WEIGHTS

	LB	L.F.
Empty (calculated)	5246	
Basic (calculated) ..	5282	
Design	7700	+6.6 -2.64
Combat (basic) mission)	6276	
Max takeoff:		
(overload)	*7700	
(normal)	*7700	
Max landing	**7350	+6.6 -2.64

*Limited by strength.
**Limited by gear strength.

FUEL AND OIL

Fuel:
Grade 115/145
Spec MIL-G-5572
No. tanks 8
Location ..... Wing
Qty ..... 230 gal
Oil:
Spec
Temps above +60°F ..... MIL-L-22851 Type II
Temps below +60°F ..... MIL-L-22851 Type III
No. tanks 2
Qty ..... 8 gal

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1510-00-701-2233
LIN A30821 COSTS,
UNIT PRICE: Refer to Table 4-2.

1-75. Loading and Performance — Typical Mission, U-8F (Seminole).

CONDITIONS	BASIC MISSION	DESIGN MISSION	NORMAL MISSION	FERRY RANGE
TAKEOFF WEIGHT (lb)	7700 4/	7700 4/	7700 4/	6922 4/
Fuel at 6.0 lb/gal (grade 115/145) (lb)	1380	1158	1380	1380
Payload (outbound) (lb)	778	1000	778	None
Payload (inbound) (lb)	None	None	None	....
Wing loading (lb/sq ft)	27.5	27.5	27.5	24.7
Stall speed (power off) (kn)	70	70	70	68
Takeoff ground run at SL 1/ (ft)	1180	1180	1180	1000
Takeoff to clear 50 ft 1/ (ft)	1560	1560	1560	1720
Rate of climb at SL 2/ (fpm)	1304	1304	1304	1550
Rate of climb at SL (one engine out) (fpm)	184	184	184	310
Time: SL to 10,000 ft 2/ (min)	8.1	8.1	8.1	6.8
Time: SL to 20,000 ft 2/ (min)	19.1	19.1	19.1	15.7
Service ceiling (100 fpm) 2/ (ft)	27,000	27,000	27,000	30,000
Service ceiling (one engine out) 2/ (ft)	7650	7650	7650	13,500
COMBAT RANGE (nmi)	1104	898	883 5/	1220
Average cruising speed (kn)	174	135	171	127
Cruising altitude (ft)	10,000	10,000	10,000	10,000
Total mission time (hr)	8.38	6.67	5.23	9.61
COMBAT RADIUS 3/ (nmi)	539	434	415 5/	....
Average cruising speed (kn)	130	130	172	....
Cruising altitude (ft)	10,000	10,000	10,000	....
Total mission time (hr)	8.35	6.83	4.97	....
FIRST LANDING WEIGHT 3/ (lb)	7054	7119	7044	....
Ground roll at SL (ft)	1280	1310	1285	....
Total from 50 ft (ft)	2025	2075	2030	....
COMBAT WEIGHT 3/ (lb)	6276	6138	6266	5650
Combat altitude (ft)	10,000	10,000	10,000	10,000
Combat speed 2/ (kn)	203	203	203	204
Combat climb 2/ (fpm)	1685	1735	1670	1935
Combat ceiling (500 fpm) 2/ (ft)	27,200	27,700	27,100	29,800
Service ceiling (100 fpm) 2/ (ft)	32,500	32,900	32,400	34,600
Service ceiling (one engine out) 2/ (ft)	15,550	15,900	15,450	17,500
Takeoff ground run at SL 1/ (ft)	760	720	760	600
Takeoff to clear 50 ft 1/ (ft)	1355	1300	1360	1060
Max rate of climb at SL 2/ (fpm)	1825	1870	1820	2100
Max speed at 12,000 ft 2/ (kn)	207	207	207	208
Basic speed at 5000 ft 2/ (kn)	193	193	193	194
LANDING WEIGHT (lb)	5643	5632	5643	5643
Ground roll at SL (ft)	1280	1060	1280	1065
Total from 50 ft (ft)	1685	1660	1685	1665

1/Maximum power – 3400 rpm. 2/Normal power – 3200 rpm.

1-75. Loading Performance — Typical Mission, U-8F (Seminole) (Con't).

3/ For RADIUS mission if radius is shown.

4/ Includes crew of 1 at 200 lb.

5/ 65-percent normal power used for cruise.

Performance Basis:

a. Data source: Contractor's flight test.

b. Performance is based on powers shown.

1-76. Performance Notes, U-8F (Seminole).

FORMULA: RADIUS MISSIONS I & II

Warm up, take off, climb on course to 10,000 feet at normal power, cruise out at long range speeds to remote base, land, and discharge passengers and baggage. Without refueling, warm up, take off, climb on course to 10,000 feet at normal power, and return at long range speeds. Range-free allowances are 10 minutes of normal power for warmups and takeoffs, plus fuel for 20 minutes at speeds for long range at sea level, and 5 percent of initial fuel for reserve.

FORMULA: RADIUS MISSION III

Warm up, take off, climb on course to 10,000 feet at normal power, cruise out at 65-percent power to remote base, land, and discharge passengers and baggage. Without refueling, warm up, take off, climb on course to 10,000 feet at normal power, and return at 65-percent power. Range-free allowances are 10 minutes of normal power for warmups and takeoffs, plus fuel for 20 minutes at speeds for long range at sea level, and 5 percent of initial fuel for reserve.

FORMULA: RANGE MISSIONS I, II, & IV

Warm up, take off, climb on course to 10,000 feet at normal power, and cruise out at long range speeds until all but reserve fuel is consumed. Range-free allowances are 5 minutes of normal power for warmup and takeoff, plus fuel for 20 minutes at speeds for long range at sea level, and 5 percent of initial fuel for reserve.

FORMULA: RANGE MISSION III

Warm up, take off, climb on course to 10,000 feet at normal power, and cruise out at 65-percent power until all but reserve fuel is consumed. Range-free allowances are 5 minutes of normal power for warmup and takeoff, plus fuel for 20 minutes at speeds for long range at sea level, and 5 percent of initial fuel for reserve.

PERFORMANCE REFERENCE

Beech Aerodynamic Report 677, Jackson, P.A., Type Inspection Report No. 50-20, Model 65 (L-23F), Gross Weight 7368 lb.

Beech Aerodynamic Report 678 and Appendixes A, B, C, and D, Hughes, A.C., Preliminary Flight-Test Evaluation L-23F Prototype.

Beech Aerodynamic Report 679, Jackson, P.A., Flight-Test Performance, Model 65 (L-23F), 7368 lb.

Beech Aerodynamic Report 695, Jackson, P.A., Type Inspection Report 65-2, Model 65 (L-23F), 7700 lb.

Beech Aerodynamic Report 732, Ross, H.C., U.S. Army Flight Manual Substantiating Data from Beech Flight Tests (L-23F).

Source: TSARCOM-DRSTS-WP

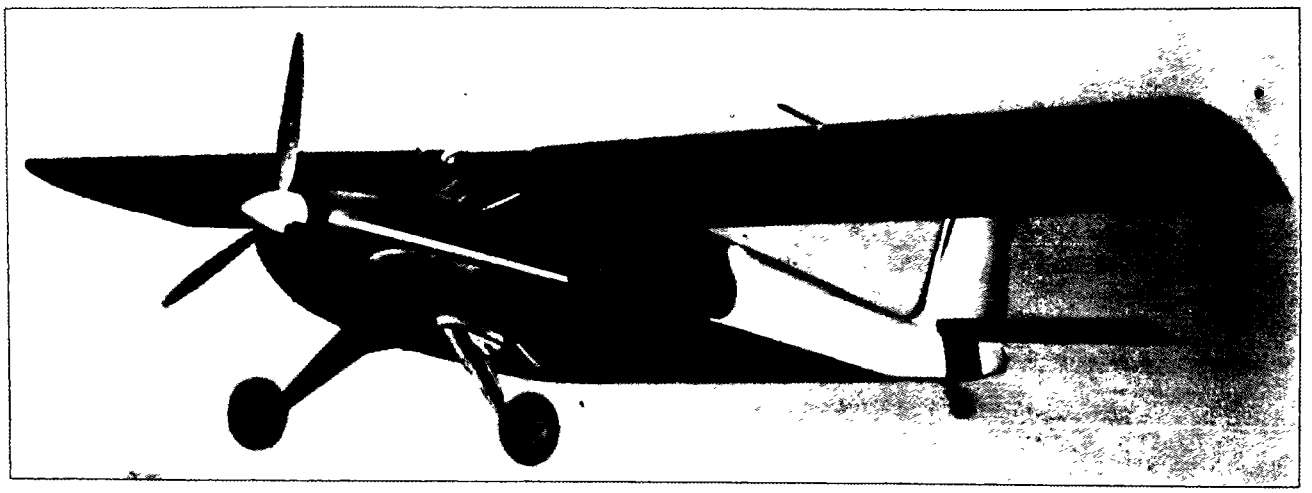
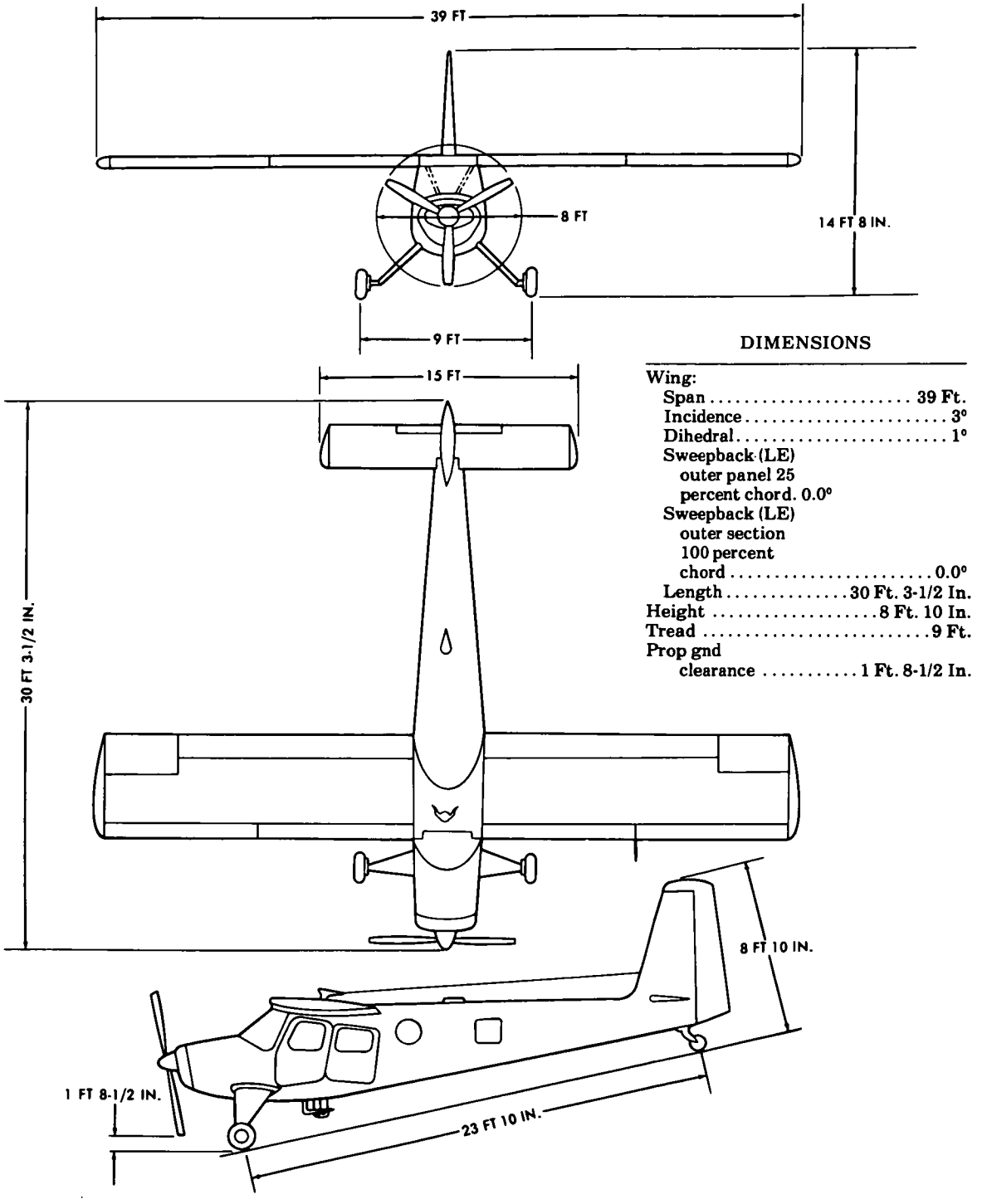


Figure 1-51. U-10A (Helio-Courier)



DIMENSIONS

Wing:	
Span	39 Ft.
Incidence	3°
Dihedral	1°
Sweepback (LE) outer panel 25 percent chord.	0.0°
Sweepback (LE) outer section 100 percent chord	0.0°
Length	30 Ft. 3-1/2 In.
Height	8 Ft. 10 In.
Tread	9 Ft.
Prop gnd clearance	1 Ft. 8-1/2 In.

Figure 1-52. Principal Dimensions, U-10A (Helio-Courier)

1-77. U-10A (Helio-Courier) Characteristics.

ENGINE

No. & model .....(1) GO-480-G1D6
Engine spec No 2227B
Superch .....NA
Red. gear ratio 0.641 (77:120)
Prop mfr .....Hartzell
Blade design No B3Z20-1/10151c-5
Prop type .....Hydraulic, constant speed
No. blades 3
Prop dia .....8 ft
Prop type certificate No.....P-907-10

ENGINE RATINGS

	BHP	RPM
Takeoff	295	3400
Normal	280	2750

TECHNICAL PUBLICATIONS

AIRFRAME:
Commercial Manuals (Contractor Supported)

ENGINE:
Commercial Manual

MISSION AND DESCRIPTION

Mfr's Model: Helio-Courier

Basic mission assignments of the U-10A aircraft include courier, observation, cargo carrying, parachute delivery and small groups, radio relay for extended periods of time, evacuation, and utility transport.

The U-10A is a versatile air vehicle in the STOL category specifically designed to utilize small, rough, and unprepared fields and offering a maximum of protection for pilot and crew. Adaptability to floats and skis enables the airplane to operate on water and snow.

The U-10A is an all-metal, high-wing, conventional-geared, four-place aircraft. The aerodynamic characteristics feature such items as long-span, high-lift type slotted flaps, and full-span leading edge slots. Lateral control is obtained by short-span, Frise-type, balanced ailerons which are operated in conjunction with leading edge spoilers. Ailerons alone are used for lateral control at higher speed. The airplane has an all-movable, slab-type, horizontal stabilizer with antibalance tab and a large vertical stabilizer and rudder.

The U-10A is powered by a six-cylinder engine splined to a three-bladed propeller with a constant-speed control and spinner to aid engine cooling.

FEATURES

Adaptable to floats & skis
STOL type aircraft

PERSONNEL

Crew (normal) (pilot, copilot) 2
Passengers 2

WEIGHTS

	LB
Empty	2249
Max takeoff (normal)	3000
Max takeoff (overload) ...	3920

FUEL AND OIL

Fuel:
Grade 115/145
Spec MIL-G-5572
No. tanks:
Wing, left ..... (1) 30 gal
Wing, right ..... (1) 30 gal
Qty ..... 60 gal
Oil:
Spec
Temps above +30°F ..... MIL-L-22851 Type II
Temps below +30°F ..... MIL-L-22851 Type III
No. tanks 1
Location ..... Engine sump
Qty ..... 2-1/2 gal

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1510-00-964-9780
LIN A30971
UNIT PRICE: Refer to Table 4-2.

1-78. Loading and Performance — Typical Mission, U-10A (Helio Courier).

CONDITIONS	BASIC MISSION
Max speed at SL ..... (kn) ...	145
Max speed, 5000 ft ..... (kn) ...	142
Min speed, power off, 40-deg flaps ..... (kn) ...	42
Performance cruise at 6000 ft, 74-percent power, 2750 rpm ..... (kn) ...	139
Range at 139 kn ..... (nmi) ...	436 (no reserve)
Extended range cruise at 10,000 ft, 49-percent power, 2200 rpm ..... (kn) ...	121
Range at 121 kn ..... (nmi) ...	700 (no reserve)
Max endurance at 5000 ft, 29-percent power, 75 in TAS ..... (hr) ...	9.14 (no reserve)
Service ceiling (100 fpm R/C) ..... (ft) ...	22,000
Takeoff data at SL, 0 wing, 25-deg flaps, paved runway:	
Takeoff weight ..... (lb) ...	3000
Ground roll ..... (ft) ...	290
Total distance over 50-ft obstacle ..... (ft) ...	500
Landing data at SL, 0 wind, 40-deg flaps, paved runway:	
Ground roll ..... (ft) ...	180
Total distance over 50-ft obstacle ..... (ft) ...	495

Source: TSARCOM-DRSTS-WP

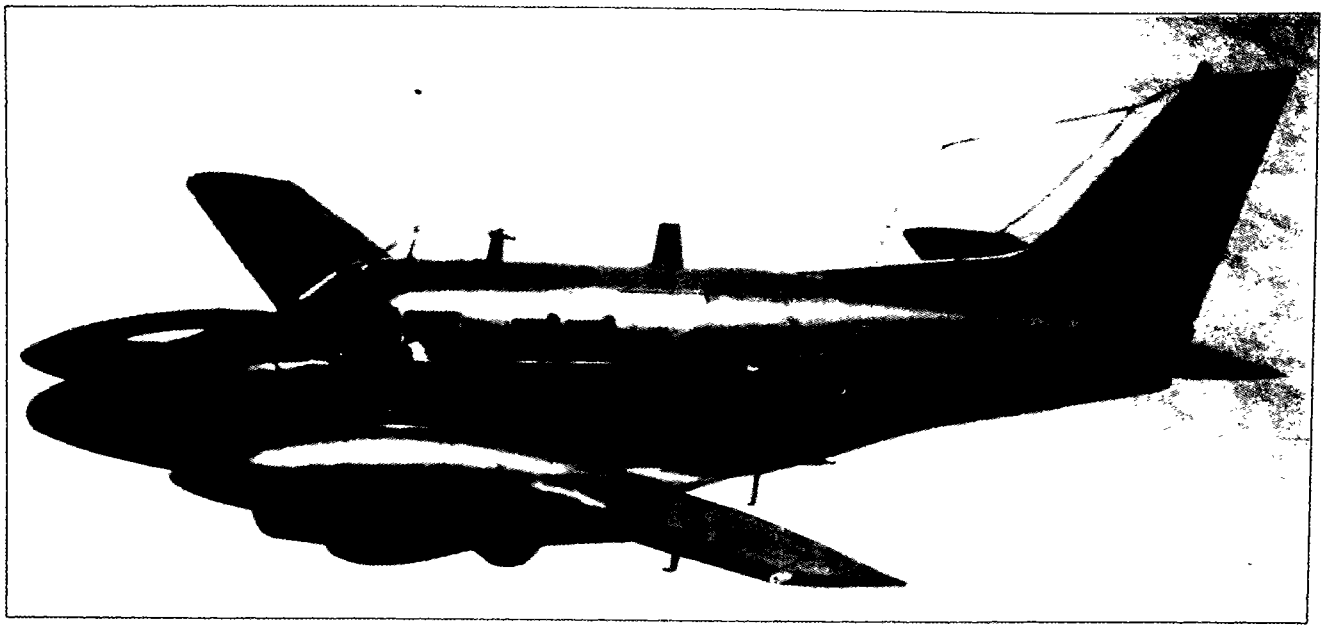
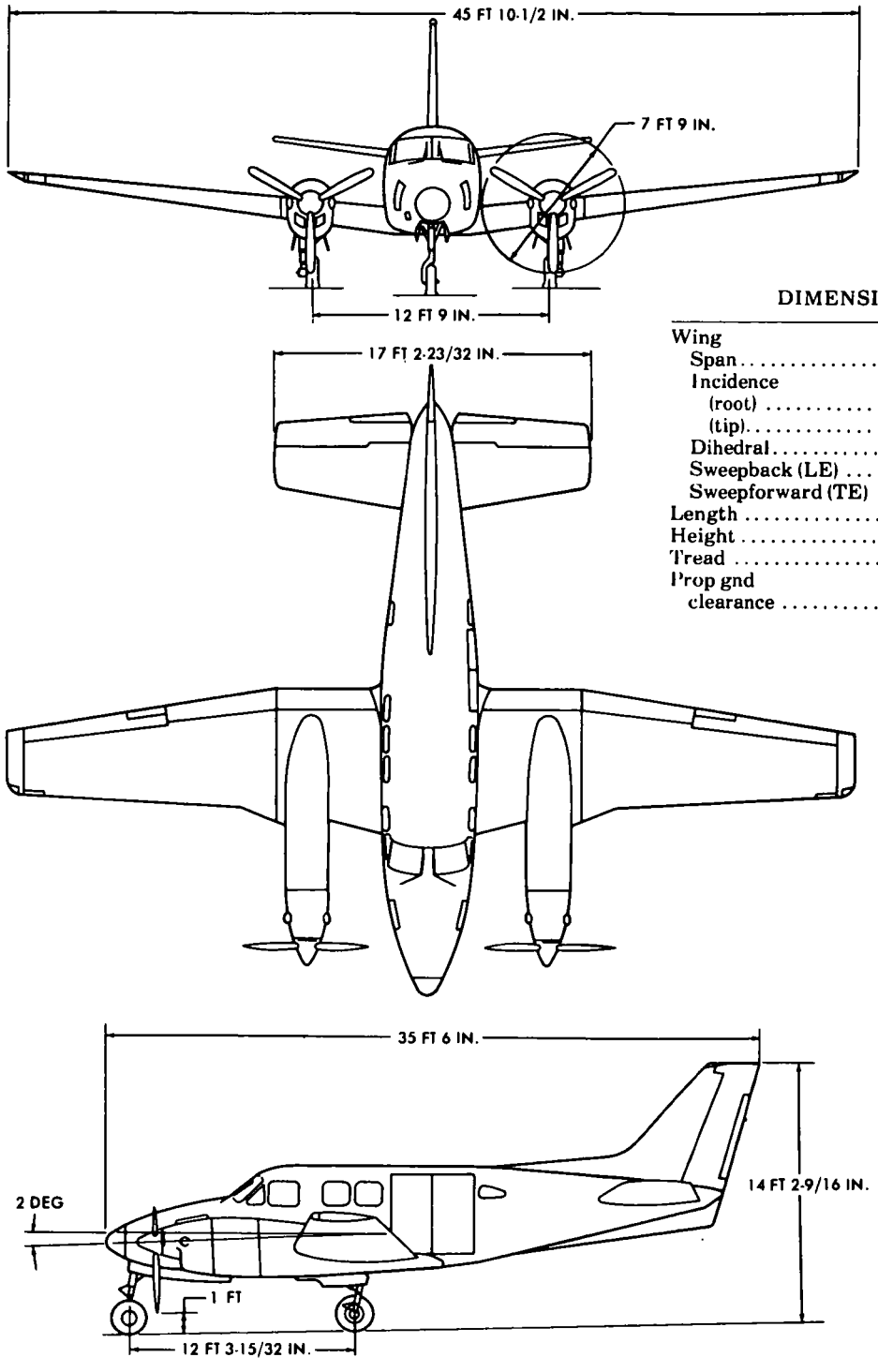


Figure 1-53. U-21 and RU-21 (UTE) (Paint Scheme Difference)



DIMENSIONS

Wing	
Span	45 Ft. 10-1/2 In.
Incidence	
(root)	4.8°
(tip)	0.0°
Dihedral	7°
Sweepback (LE)	0.0°
Sweepforward (TE)	NVAL
Length	35 Ft. 6 In.
Height	14 Ft. 2-1/2 In.
Tread	12 Ft. 9 In.
Prop gnd clearance	1 Ft.

Figure 1-54. Principal Dimensions, U-21A, U-21G (UTE)

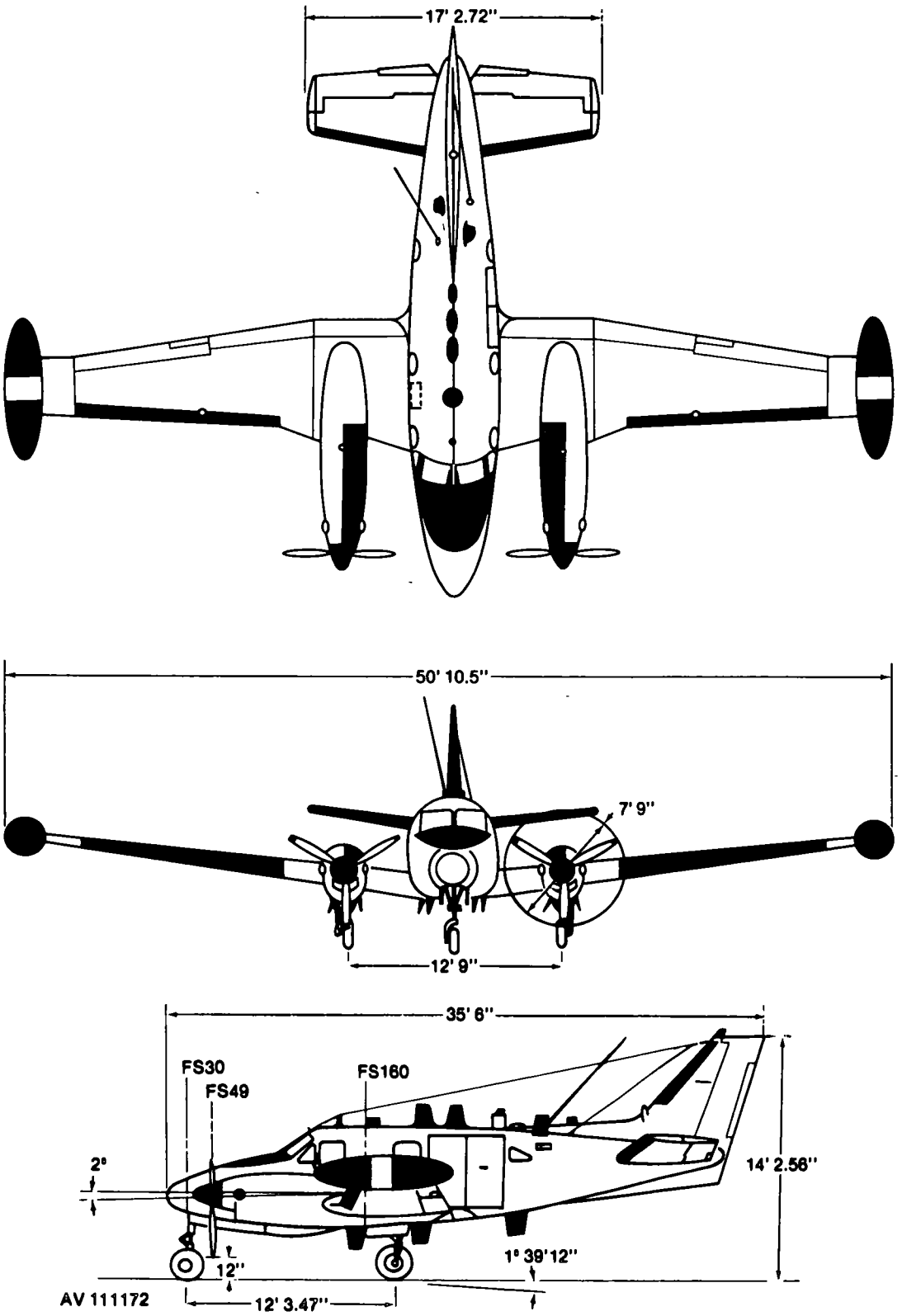


Figure 1-55. Three View Drawing and Dimensions (RU-21A)

1-79. U-21A and RU-21A (UTE) Characteristics.

ENGINE

No. & model .... (2) T74-CP-700 (PT6A-20)
Mfr ..... UACL
Type ..... Turboprop
Prop mfr ..... Hartzell
Prop type ..... Hyd, CS, FF
No. blades 3
Prop dia ..... 7 ft. 9 in.

ENGINE RATINGS

Takeoff SHP 550 ALT SL

TECHNICAL PUBLICATIONS

AIRFRAME:
TM 55-1510-200-CL
TM 55-1510-200-PM
TM 55-1510-200-PMD
TM 55-1510-200-MTF
TM 55-1510-200-S
TM 55-1510-209-L
TM 55-1510-209-CL
TM 55-1510-209-CL-1
TM 55-1510-209-10
TM 55-1510-209-10-1
TM 55-1510-209-23-1, -2
TM 55-1510-209-23P-1, P-2

ENGINE:
TM 55-2840-232-23P
TM 55-2840-232-24
TM 55-2840-120 (DMWR)

MISSION AND DESCRIPTION

Mfr's Model: Beech Aircraft Corporation 65-A90-1

The U-21A is an off-the-shelf utility aircraft. The first production aircraft was tested by USATECOM for confirmation.

The U-21A is an unpressurized, low wing, all-metal construction aircraft of versatile design with an all-weather capability. The primary mission of the U-21A is to perform utility services in the combat zone, support commanders and their staff in command and control, adminstration, liaison and aeromedical evacuation. The basic version of the aircraft is configured for troop transport; however, alternate configurations are available for service as air ambulance, staff transport, or air cargo transport.

DEVELOPMENT

Date of contract ..... 30 September 1966
Contracting agency ..... AVSCOM
No. of test aircraft 3
First flight (scheduled) ..... March 1967
Completion of test and evaluation ..... July 1967
Contract delivery schedule ..... 2 April 1967
23 May 1967
23 June 1967

FEATURES

Cabin heating and ventilating system.
Deicing and anti-icing system.
Rotating beacon light.
Steerable nose wheel.
Controllable pitch, full feathering, and reversible props.

PERSONNEL

Pilot 1
1/Passengers 6
or
2/Troops 10
or
Litter patients 3
plus
Ambulatory patients 3
plus
Attendant 1

RU-21A
Pilot 1
Co-Pilot 1
Equip. Operators 2

WEIGHTS

	LB
Empty	5401
Gross takeoff	9650
Gross landing	9168
Cargo capacity	3000

FUEL AND OIL

Fuel:
Grade JP4/5
Spec MIL-T-5624
No. tanks ... 10
Location ... (8) wing
Qty ..... 256 gal
Location ... (2) Nacelle
Qty ..... 114 gal
Oil:
Spec
Temps above -40°F MIL-L-23699
Temps below -40°F MIL-L-7808
No. tanks ... 2
Location ... Nacelle
Qty ..... 2.3 gal each tank

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

U-21A NSN 1510-00-933-8223
LIN A30946
UNIT PRICE: Refer to Table 4-2

RU-21A NSN 1510-00-587-3375
LIN A30582 COSTS, $587,004

Note: 1/ Normal seats 2/Combat - equipped

RU-21A: U-21A Modified for installation of special mission EW equipment.

1-80. Performance — Typical Mission, U-21A (UTE).

Payload	(lb)	2000 1/
Range	(nmi)	1249
Cruise speed 2/	(kn)	180
Max speed	(kn)	230
Min takeoff distance	(ft)	1000
Min landing distance	(ft)	800
Rate of climb (1 engine)	(fpm)	350
Service ceiling (2 engines)	(ft)	25,000
Service ceiling (1 engine)	(ft)	10,000

1/ 3000 lb with fuel trade off.

2/ True airspeed at normal rated power.

Source: TSARCOM-DRSTS-WP

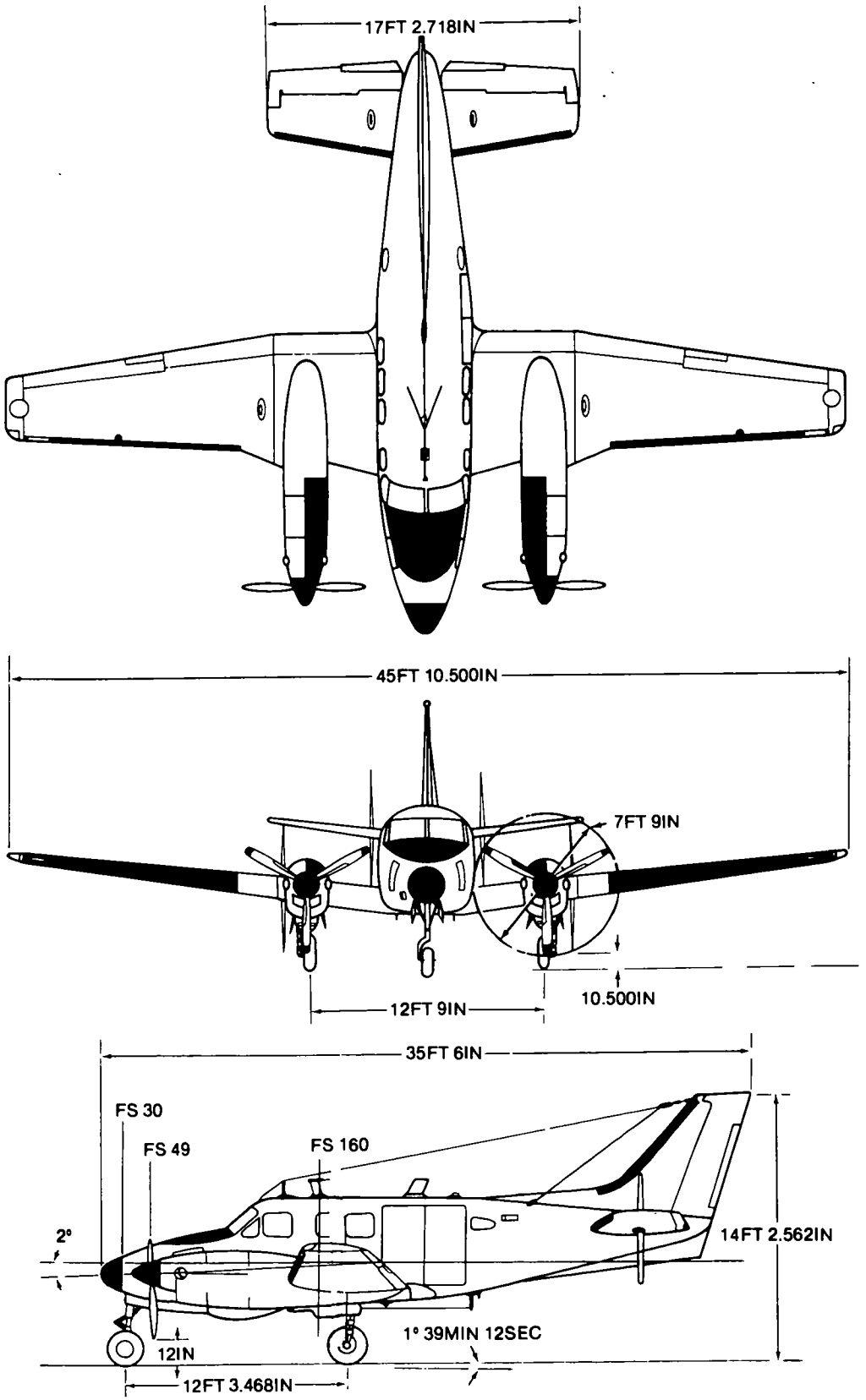


Figure 1-56. Principal Dimensions Diagram, U-21D

1-81. RU-21D (UTE) Characteristics.

ENGINE

No. & model	(2) T74-CP-700 (PT6A-20)
Mfr	UACL
Type	Turboprop
Prop mfr	Hartzell
Prop type	Hyd, CS, FF
No. blades	3
Prop dia	7 ft. 9 in.

ENGINE RATINGS

Takeoff SHP 550 ALT SL

TECHNICAL PUBLICATIONS

AIRFRAME:
- TM 55-1510-200-PM
- TM 55-1510-200-PMD
- TM 55-1510-200-MTF
- TM 55-1510-200-S
- TM 55-1510-209-CL-1
- TM 55-1510-209-10-1
- TM 55-1510-209-23-1
- TM 55-1510-209-23-2
- TM 55-1510-209-23P-1
- TM 55-1510-209-23P-2

ENGINE:
- TM 55-2840-232-23P
- TM 55-2840-232-24
- DMWR 55-2840-120

MISSION AND DESCRIPTION

Mfr's Model: Beech Aircraft Corporation 65-A90-1

The U-21D is a unpressurized, low wing, all-metal construction aircraft of versatile design with an all-weather capability. The primary mission of the U-21D is to perform utility missions in the combat zone.

DEVELOPMENT

	U-21D
Date of contract	2 FEB 68
Contracting agency	AVSCOM
No. of test aircraft	–
First flight (scheduled)	MAY 68
Completion of test and evaluation	–
Contract delivery schedule	JUL 68 OCT 68

FEATURES

Cabin heating and ventilating system.
Deicing and anti-icing system.
Rotating beacon light.
Steerable nose wheel.
Controllable pitch, full feathering, and reversible props.

PERSONNEL

Pilot	1
Co-Pilot	1

WEIGHT

	LB
Empty (wet)	6497
Gross takeoff	9650
Gross landing	9168
Cargo capacity	3000

FUEL AND OIL

Fuel:	
Grade	JP4/5
Spec	MIL-T-5624
No. tanks	10
Location	(8) wing
Qty	256 gal
Location	(2) Nacelle
Qty	114 gal
Oil:	
Spec	
Temps above 40°F	MIL-L-23699
Temps below 40°F	MIL-L-7808
No. tanks	2
Location	Nacelle
Qty	2.3 gal each tank

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1500-00-804-3641
LIN A30585
UNIT PRICE: Refer to Table 4-2.

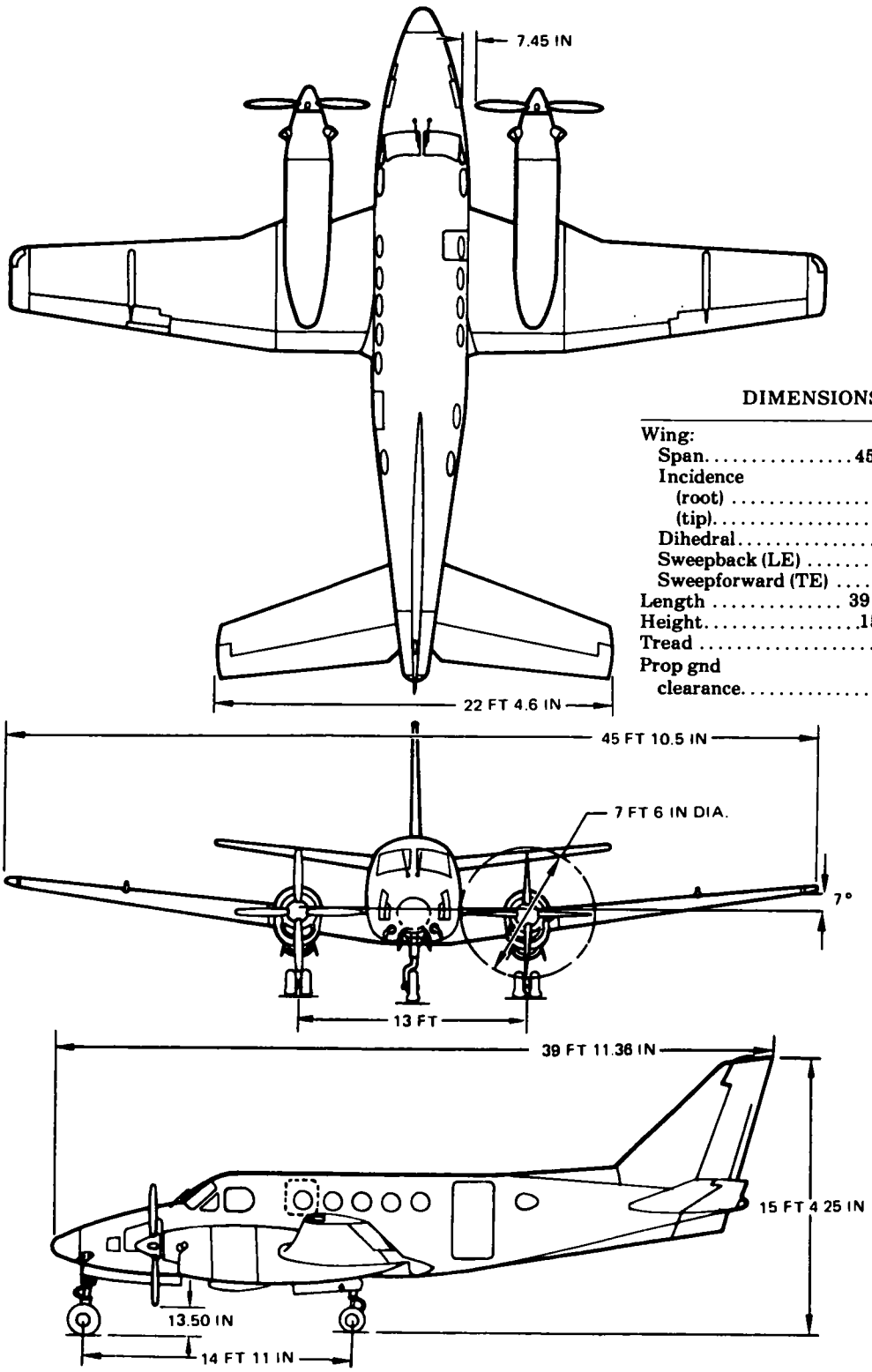
1-82. Performance — Typical Mission, RU-21D (UTE).

Payload .....(lb) ..	1,767 1/
Range .....(nmi) ..	800
Cruise speed 2/ .....(kn) ..	176
Max speed .....(kn) ..	230
Min takeoff distance .....(ft) ..	1,700
Min landing distance .....(ft) ..	1,280
Rate of climb (1 engine) .....(fpm) ..	410
Service ceiling (2 engines) .....(ft) ..	25,750
Service ceiling (1 engine) .....(ft) ..	9,100

1/Mission equipment and two operators.

2/True airspeed at normal rated power.

Source: TSARCOM-DRCPM-AEL



DIMENSIONS

Wing:	
Span	45 Ft. 10.5 In.
Incidence	
(root)	4.8°
(tip)	1.0°
Dihedral	7°
Sweepback (LE)	0.0°
Sweepforward (TE)	NVAL
Length	39 Ft. 11.36 In.
Height	15 Ft. 4.25 In.
Tread	13 Ft.
Prop gnd clearance	1 Ft. 1 In.

Figure 1-57. Principal Dimensions, U-21F (UTE)

1-83. U-21F (UTE) Characteristics.

ENGINE

No. & model ..... (2) PT6A-28
Mfr ..... UACL
Type ..... Turboprop
Prop mfr ..... Hartzell
Prop type ..... Hyd, CS, FF
No. blades 4
Prop dia ..... 7 ft. 6 in.

ENGINE RATINGS

Takeoff SHP 680 ALT SL

TECHNICAL PUBLICATIONS

Commercial Manuals (Contractor Supported)

MISSION AND DESCRIPTION

Mfr's Model: Beech Aircraft Corporation A100

The U-21F is an off-the-shelf utility aircraft.

The U-21F is a pressurized, low wing, all-metal construction aircraft of versatile design with an all-weather capability. The primary mission of the U-21F is to transport high ranking military and government officials.

DEVELOPMENT

Date of contract	30 JUN 71
Contracting agency	AVSCOM
No. of test aircraft	–
First flight (scheduled)	MAY 71
Completion of test and evaluation	–
Contract delivery schedule	30 JUL 71 30 AUG 71

FEATURES

Cabin heating and ventilating system.
Deicing and anti-icing system.
Rotating beacon light.
Steerable nose wheel.
Controllable pitch, full feathering, and reversible props.
Pressurized cabin.
Air conditioning.

PERSONNEL

Pilot 1
Co-Pilot 1
Passengers 7

WEIGHTS

	LB
Empty (wet)	6790
Gross takeoff	11,500
Gross landing	11,210

FUEL AND OIL

Fuel:
Grade JP4/5
Spec MIL-T-5624
No. tanks 14
Location ..... 10 wing
Qty ..... 274 gal
Location ..... (2) Nacelle
Qty ..... 114 gal
Location ..... (2) Center Section
Qty ..... 82 gal
Oil:
Spec
Temps above -40°F MIL-L-23699
Temps below -40°F MIL-L-7808
No. tanks 2
Location ..... Nacelle
Qty ..... 2.3 gal each tank

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1510-00-169-0295
LIN A30951
UNIT PRICE: Refer to Table 4-2.

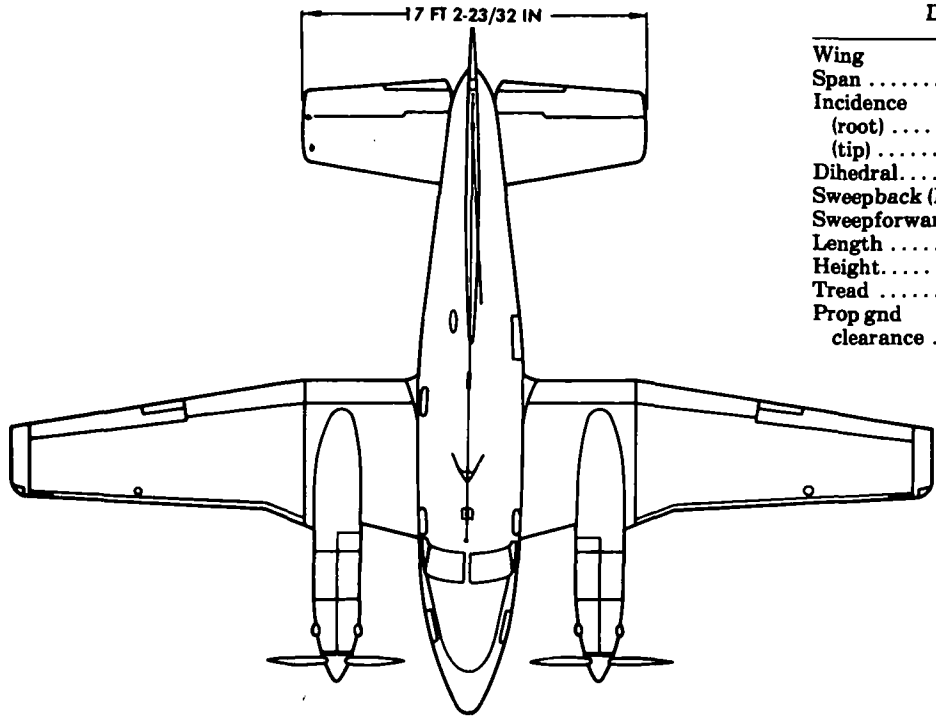
1-84. Performance — Typical Mission, U-21F (UTE).

Payload .....(lb) ..	1,400 1/
Range .....(nmi) ..	1,000
Cruise speed 2/.....(kn) ..	236
Max speed .....(kn) ..	270
Min takeoff distance .....(ft) ..	1,855
Min landing distance .....(ft) ..	866
Rate of climb (1 engine) .....(fpm) ..	452
Service ceiling (2 engines) .....(ft) ..	24,850
Service ceiling (1 engine) .....(ft) ..	9,300

1/3000 lb with fuel trade off.

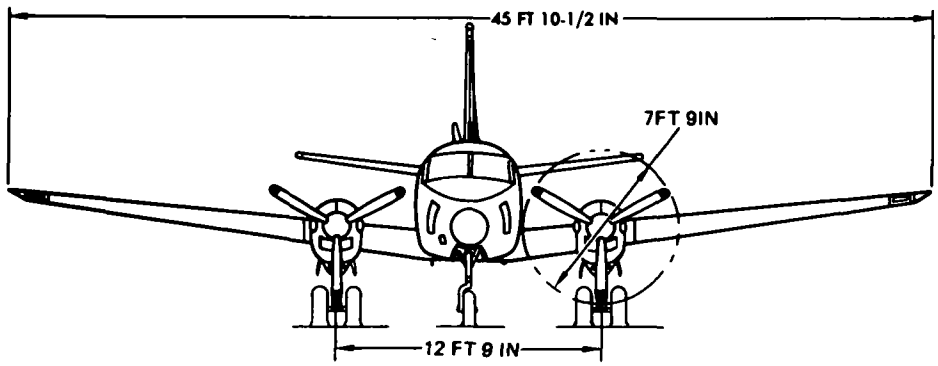
2/True airspeed at normal rated power.

Source: TSARCOM-DRSTS-WP



DIMENSIONS

Wing	
Span	45 Ft. 10-1/2 In.
Incidence	
(root)	4.8°
(tip)	0.0°
Dihedral	7°
Sweepback (LE)	0.0°
Sweepforward (TE)	NVAL
Length	35 Ft. 6 In.
Height	14 Ft. 2-1/2 In.
Tread	12 Ft. 9 In.
Prop gnd clearance	1 Ft.



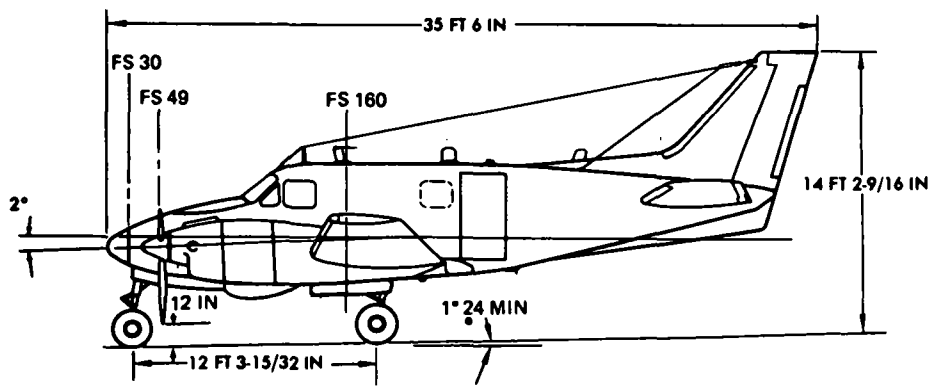


Figure 1-58. Principal Dimensions, RU-21B and RU-21C (UTE)

1-85. RU-21B and RU-21C (UTE) Characteristics.

ENGINE

No. & model	(2) T74-CP-702 (PT6A-29)
Mfr	UACL
Type	Turboprop
Prop mfr	Hartzell
Prop type	Hyd, CS, FF
No. blades	3
Prop dia	7 ft. 9 in.

ENGINE RATINGS

Takeoff SHP 620 ALT SL

TECHNICAL PUBLICATIONS

AIRFRAME:
- TM 55-1510-214-10
- TM 55-1510-214-CL
- TM 55-1510-214-23
- TM 55-1510-209-23P-1, P-2
- TM 55-1510-200-PM
- TM 55-1510-200-PMD
- TM 55-1510-200-MTF
- TM 55-1510-200-S

ENGINE:
- TM 55-2840-232-24
- TM 55-2840-232-23P

MISSION AND DESCRIPTION

Mfr's Model: Beech Aircraft 65-A90-2 (RU-21B)
65-A90-3 (RU-21C)

The RU-21 B & C models are modified U-21A to carry special ASA mission equipment. They have engines with greater SHP, are beefed up to accomodate higher gross weight, and are equipped with dual wheel landing gears.

DEVELOPMENT

Date of contract, Amendment	12 Jun 1967
Contracting agency	AVSCOM
No. of test aircraft	2
First Flight (Scheduled)	Aug 1968
Completion of Test and Evaluation	Final test not completed
Contract Delivery Schedule	(Est Apr 72)

FEATURES

- Cabin heating and ventilating system.
- Deicing and anti-icing system.
- Rotating beacon light.
- Steerable nose wheel.
- Controllable pitch, full feathering, and reversible props.

PERSONNEL

Pilot	1
Copilot	1
Mission Equipment Operator	
RU-21B	3
RU-21C	2
Passengers	0

WEIGHTS

		LB
Empty	RU-21B	5955
	RU-21C	5907
Gross takeoff		10,900
Gross landing		10,900

FUEL AND OIL

Fuel:
Grade JP4/5
Spec MIL-T-5624

B MODEL

No. Tanks 12
Location ..... (10) Wing
Qty ..... 290 gals
Location ..... (2)Nacelle
Qty ..... 106 gals

C MODEL

No. Tanks 12
Location ..... (8) wing
Qty ..... 290 gals
Location ..... (2) Nacelle
Qty ..... 106 gals

Oil:
Spec
Below ..... 40°F(25°C) MIL-L-7808
Above ..... 40°F(25°C) MIL-L-23699
No. tanks 2
Location ..... Nacelle
Qty ..... 2.3 gal each tank

AVIONICS/ARMAMENT

Refer to chapter 2.

FLYAWAY COSTS/NSN

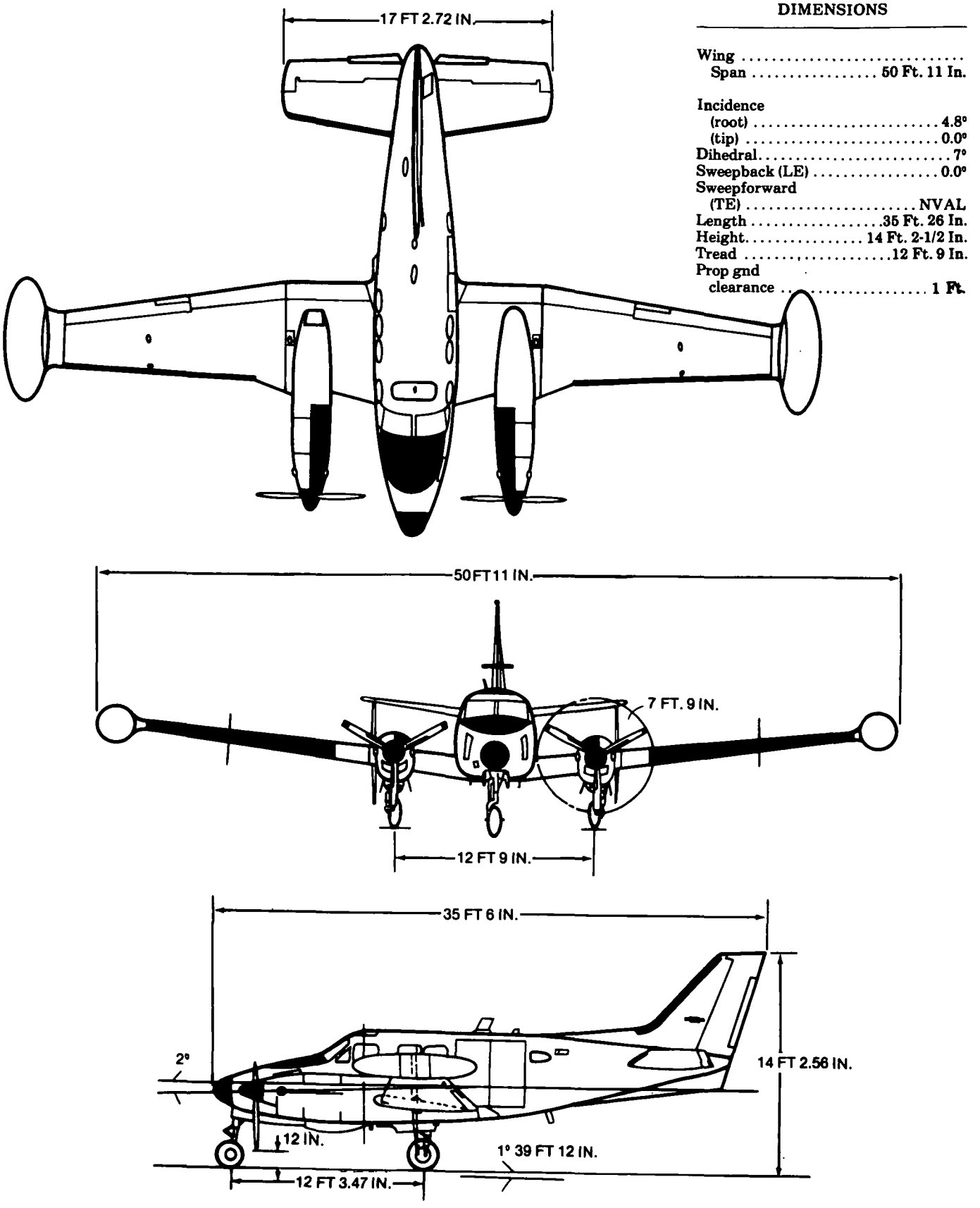
RU-21B NSN 1510-00-878-4338
LIN A30583 COSTS $1,257,811
RU-21C NSN 1510-00-878-4336
LIN A30584 COSTS $1,259,760

1-86. **Performance — Typical Mission, RU-21B and RU-21C (UTE).**

Payload	(lb)	1371 [1/]	B Model
		1658 [1/]	C Model
Range	(nmi)	940	B Model
		940	C Model
Cruise speed	(kn)	194	
Max speed	(kn)	208	
Min takeoff distance	(ft)	2860	B Model
Min takeoff distance	(ft)	2140	C Model
Min landing distance	(ft)	1750	B Model
Min landing distance	(ft)	1360	C Model
Rate of climb (1 engine)	(fpm)	208	B Model
Rate of climb (1 engine)	(fpm)	365	C Model
Service ceiling (2 engines)	(ft)	20,000	
Service ceiling (1 engine)	(ft)	7,000	

[1/] Mission Equipment

Source: TSARCOM-DRCPM-AEL



DIMENSIONS

Wing	
Span	50 Ft. 11 In.
Incidence	
(root)	4.8°
(tip)	0.0°
Dihedral	7°
Sweepback (LE)	0.0°
Sweepforward (TE)	NVAL
Length	35 Ft. 26 In.
Height	14 Ft. 2-1/2 In.
Tread	12 Ft. 9 In.
Prop gnd clearance	1 Ft.

Figure 1-59. Principal Dimensions, RU-21H (Guardrail V)

1-87. RU-21H (Guardrail V) Characteristics.

ENGINE

No. & model .... (2) T74-CP-700 (PT6A-20)
Mfr ..... UACL
Type ..... Turboprop
Prop mfr ..... Hartzell
Prop type ..... Hyd, CS, FF
No. blades 3
Prop dia ..... 7 ft. 9 in.

ENGINE RATINGS

Takeoff SHP 550 ALT SL

TECHNICAL PUBLICATIONS

AIRFRAME:
TM 55-1510-215-10-2
TM 55-1510-215-CL-2
TM 55-1510-215-23
TM 55-1510-215-23-1
TM 55-1510-215-23-2
TM 55-1510-209-23P-2, P-2
TM 55-1510-200-MTF
TM 55-1510-200-PM
TM 55-1510-200-PMD
TM 55-1510-200-S

ENGINE:
TM 55-2840-232-23P
TM 55-2840-232-24

MISSION AND DESCRIPTION

The RU-21H is an unpressurized, all metal low wing aircraft powered by two T74-CP-700 turboprop engines. Distinguishable features of the acft are the slender, streamline engine nacelles, square-tipped tail services, and swept back vertical stabilizer with ventral fin. Vertically oriented antennas and tip pods are installed on the wings. Cabin entrance and egress is made through an air-stair type door on the left side of the fuselage. An escape hatch is also fitted in the top of the pilots compartment. The primary missions of this acft are signal intelligence and electronic surv. Features include IR paint scheme.

DEVELOPMENT

Date of contract ..... 30 JUN 76
Contracting agency ..... USACERCOM
No. of test aircraft ..... PIP
First flight (scheduled) ..... N/A
Completion of test and evaluation ..... SEP 78
Contract delivery schedule ..... SEP 78 -FEB 80

FEATURES

Cabin heating and ventilating system.
Deicing and anti-icing system.
Rotating beacon light.
Steerable nose wheel.
Controllable pitch, full feathering, and reversible props.
Capacitance Fuel Gaging System

PERSONNEL

Pilot 1
CoPilot 1

WEIGHTS

	LBS.
Basic	6480
Gross takeoff	10,200
Gross landing	9700
Mission Equip	1000

FUEL AND OIL

Fuel:
Grade JP4/5
Spec MIL-T-5624
No. tanks 10
Location ..... (8) wing
Qty ..... 256 gal
Location ..... (2) Nacelle
Qty ..... 114 gal
Oil:
Spec
Temps above 32°F MIL-L-23699
Temps below 32°F MIL-L-7808
No. tanks 2
Location ..... Nacelle
Qty ..... 2.3 gal each tank

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1510-00-394-3320
LIN Z04570
UNIT PRICE: Refer to Table 4-2.

1-88. Performance — Typical Mission, RU-21H (UTE).

Payload .....(lb) ..	1,767 1/
Range .....(nmi) ..	800
Cruise speed 2/.....(kn) ..	176
Max speed .....(kn) ..	230
Min takeoff distance .....(ft) ..	1,700
Min landing distance .....(ft) ..	1,280
Rate of climb (1 engine) .....(fpm) ..	410
Service ceiling (2 engines) .....(ft) ..	25,750
Service ceiling (1 engine) .....(ft) ..	9,100

1/ Mission equipment and two operators.

2/True airspeed at normal rated power.

Source: TSARCOM-DRCPM-AEL

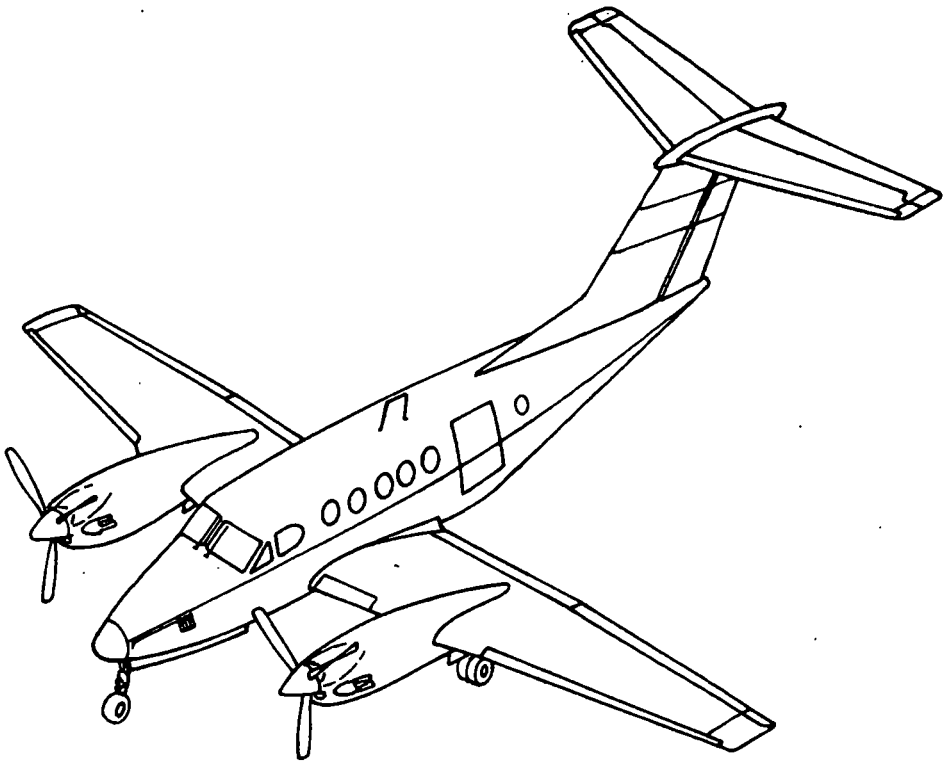
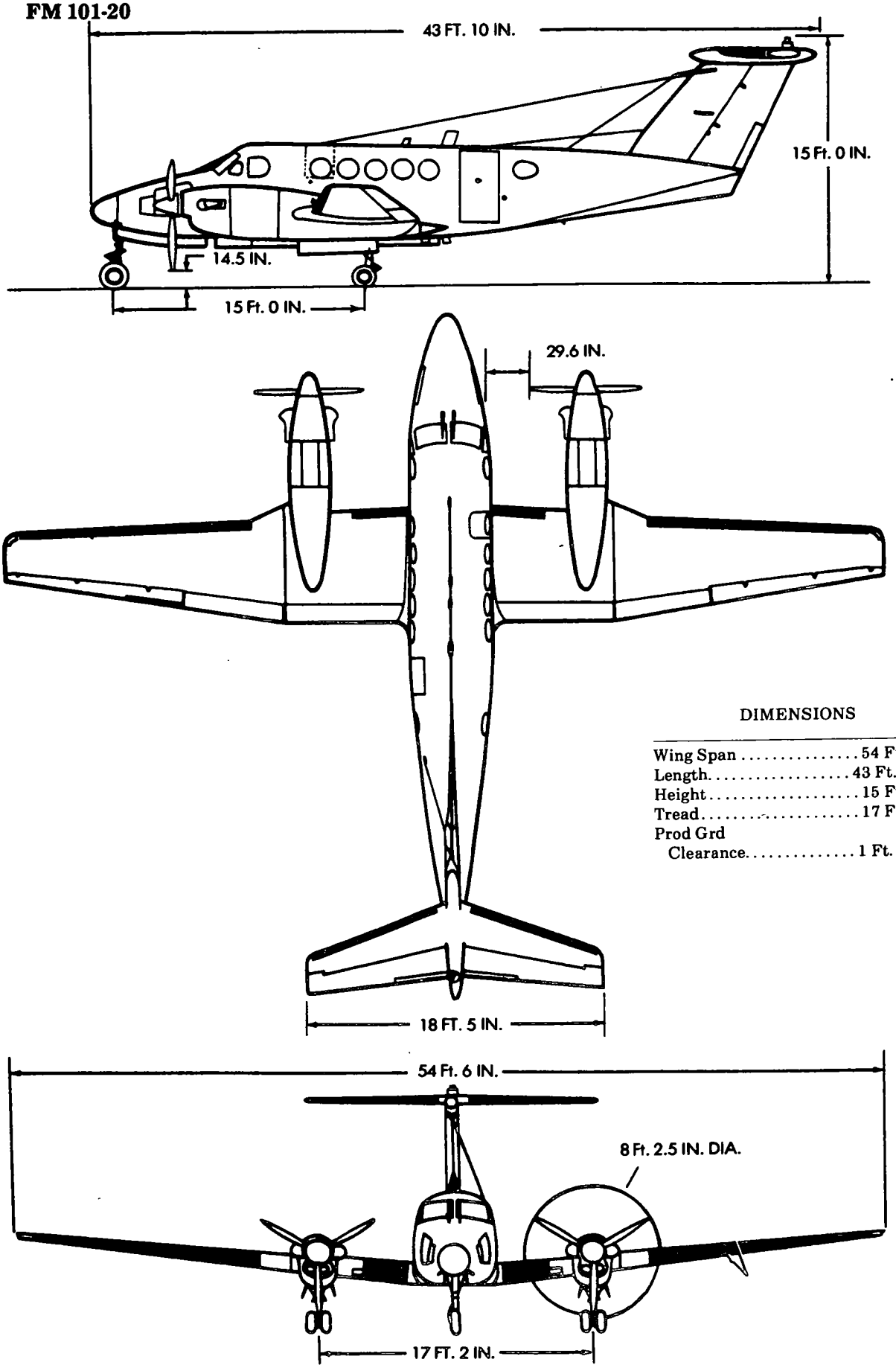


Figure 1-60. U-21J (Typical)



DIMENSIONS

Wing Span	54 Ft. 6 In.
Length	43 Ft. 10 In.
Height	15 Ft. 0 In.
Tread	17 Ft. 2 In.
Prod Grd Clearance	1 Ft. 2.5 In.

Figure 1-61. U-21J (Typical)

1-89. RU-21J Characteristics.

ENGINE

No. and Model ..... (2) PT6A-41
Mfr ..... UACL
Type ..... Turbo Prop
Prop Mfg ..... Hartzell
Prop Type C5
No. Blades 3
Prop Dia. ..... 8 Ft. 2½ In.

ENGINE RATINGS

TAKEOFF SHP 850 ALT SL

MISSION AND DESCRIPTION

Mfg. Model: Beech Aircraft Corp A100-1

The U-21J, an off-the-shelf utility aircraft which is totally contractor supported.

The U-21J is an all metal twin turbo prop engine, fixed wing, pressurized cabin, passenger/cargo carrying aircraft. The aircraft is designed and equipped for flight operations under Instrument Flight Rule (IFR) conditions day or night into high density air traffic control zones and into known icing weather conditions. The primary mission of this aircraft is to perform utility and command liaison missions.

Serial Numbers 71-21058 thru 71-21060.

DEVELOPMENT

Date of contract 1971
First flight (Similar aircraft) ..... N/A
First acft delivered ..... July 1974

WEIGHTS

LOADING	LB.
Empty	
Basic	
Design	
Combat	
Clean	
Light Scout	
Heavy Scout	
Hog	
Max. Takeoff	
Max. Landing	

FUEL AND OIL

Fuel:
Grade ..... JP 4/5
Spec MIL-T-5624
No. tanks 12
Location ..... 10 Wing
2 Nacelle
Qty ..... 386 (544 w/ Aux Tanks)

Oil:
Spec MIL-L-23699
No. tanks 2
Location Nacelle
Qty ..... 3.5 Gal Each Tank

TECHNICAL PUBLICATIONS

AIRFRAME:

Commercial Manuals
(Contractor Supported)

ENGINE:

FEATURES

All Metal
T-Tail
Retractable Tricycle with Dual Main Wheel
Duel Side by Side Flight Controls

PERSONNEL

Crew 2

AVIONICS / ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1520-00-124-0914
LIN Z04615
UNIT PRICE: Refer to Table 4-2.

1-90. Performance — Typical Mission, U-21J.

Payload..... (LB) Range ..... (NMI) Cruise Speed..... (KN) Max Speed ..... (KN) Min Takeoff Distance ..... (FT) Min Landing Distance..... (FT) Rate of Climb (1 Eng) ..... (FPM) Service Ceiling (2 Eng) ..... (Ft) Service Ceiling (1 Eng)..... (Ft)	

Source: TSARCOM DRCPM-AEL

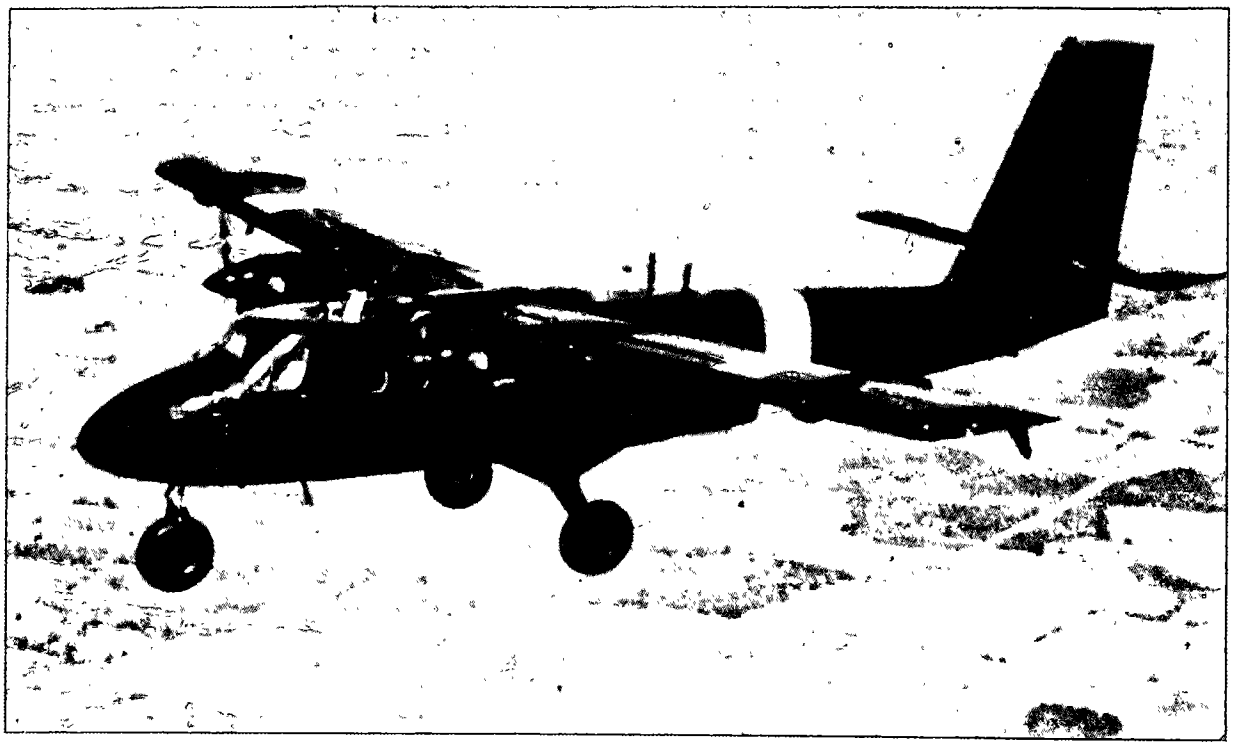


Figure 1-62. UV-18A (Twin Otter)

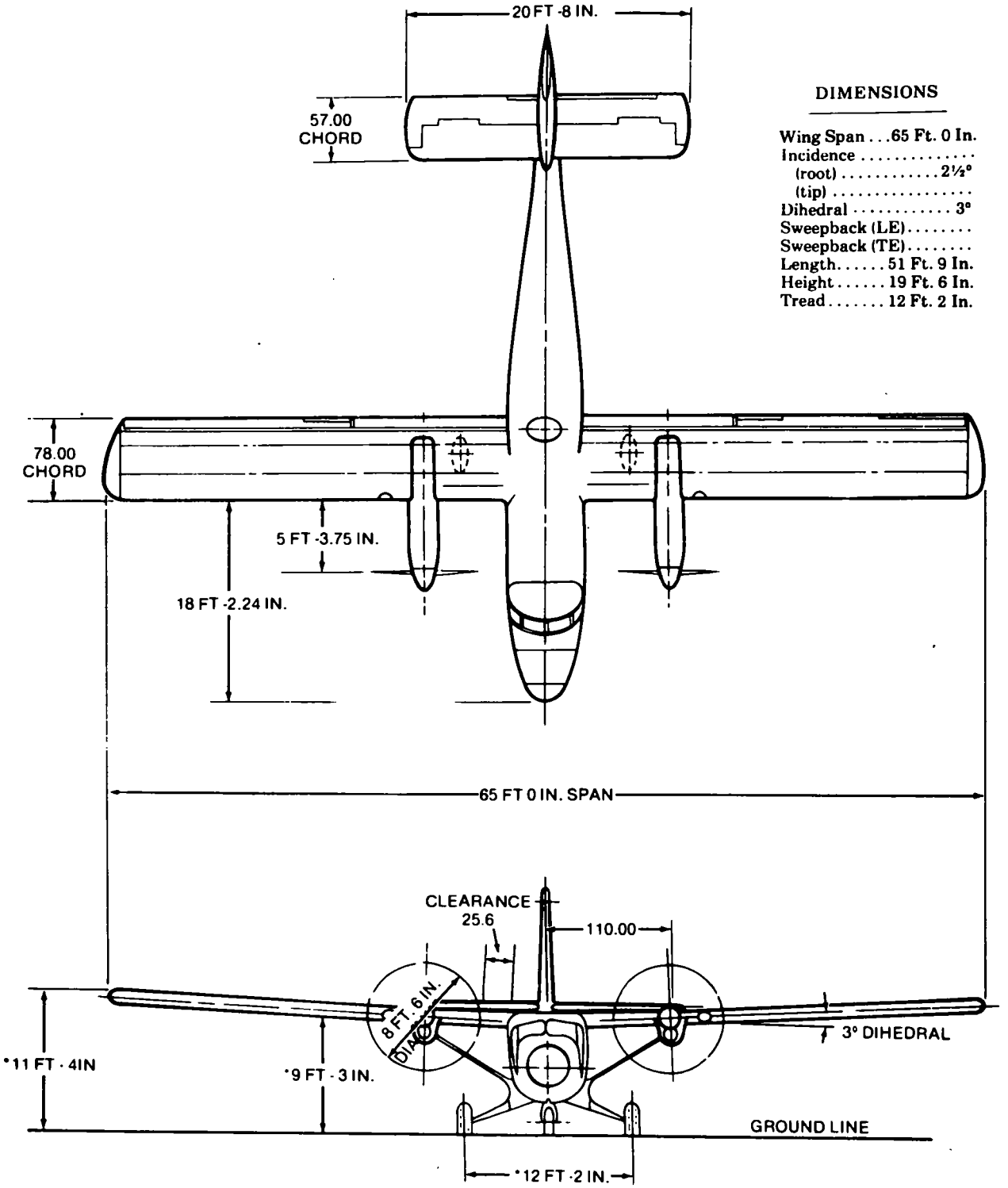


Figure 1-63. Principal Dimensions, UV-18A (Twin Otter)

1-91. UV-18A (Charactersitcs).

ENGINE

No. and Model .... (2) PT6A-27
Mfr ..... Canadian P&W
Engine Spec. No 583
Prop mfg ..... Hartzell
Prop type C5
No. blades 3

ENGINE RATINGS

	SHP	Condition
Take-off	620	ISA+18°C
Max Cruise	620	ISA+6°C

TECHNICAL PUBLICATIONS

AIRFRAME:

Commercial Manuals
(Contractor Supported)

ENGINE:

Commercial Manual

MISSION AND DESCRIPTION

The aircraft with a crew of two is capable of carrying twenty passengers with baggage in the utility seating arrangement to provide command administrative, logistics and personnel flights from battalion headquarters to remote sites throughout western and northern Alaska on a year-round basis. With the utility seats folded a partial or full freight-carrying configuration is available. With necessary adaptations, the aircraft may be used in an air ambulance, rescue, forrestry / pipeline patrol and air drops of personnel equipment and supplies missions.

CABIN VOLUME (USEABLE)	384 CU FT
BAGGAGE COMPT-VOLUME-REAR	52 CU FT
BAGGAGE COMPT-VOLUME-REAR (MOD 6/1075)	88 CU FT
BAGGAGE COMPT-VOLUME-FWD	22 CU FT

DEVELOPMENT

Date of contract .....
First flight (Similar aircraft) .....
First acft delivered ..... Dec 1976

FEATURES

All metal, high wing monoplane
Fixed tricycle landing gear
Conventional three control, dual side-by-side rudder pedal / control column combination

PERSONNEL

Crew 2
Passengers 20

WEIGHTS

LOADING	LB.
Empty	
Basic	
Design	
Combat	
Clean	
Light Scout	
Heavy Scout	
Hog	
Max. Takeoff	12,500
Max. Landing	12,300

(C) Calculated
*For Basic Mission

FUEL AND OIL

Fuel:
Grade JP4/5
Spec MIL-J-5624G
No. Tanks 10
Location ... 8 Under Floor, 2 in Wing
Qty ..... 2608 Lbs.
Oil:
Spec MIL-L-23699
No. Tanks 2
Location ..... in Engines
Qty .....

AVIONICS/ARMAMENT

Refer to chapter 2.

UNIT PRICE/NSN

NSN 1510-01-011-1462
LIN A30989 COSTS
UNIT PRICE: Refer to Table 4-2.

1-92. Performance — Typical Mission, UV-18A (Twin Otter).

Payload.....(LB)	3003 1/
Range .....(NMI)	400
Cruise Speed.....(KN)	181
Max Speed .....(KN)	
Min Takeoff Distance.....(FT)	1200
Min Landing Distance.....(FT)	1050
Rate of Climb (1 Engine).....(FPM)	340
Service Ceiling (2 Engines) .....(FT)	26,700
Service Ceiling (1 Engine) .....(FT)	11,600

1/ 4083 Lb with fuel trade off.

Source: TSARCOM-DRSTS-WP

CHAPTER 2

LOGISTICS AND MATERIAL

Section I. MAXIMUM ALLOWABLE OPERATING TIME (MAOT) (MAJOR COMPONENTS

2-1. Major Components.

This section was eliminated since the applicable Technical Manuals (TM's) are now included in Chapter 1, Section IV, Standard Aircraft Characteristics. The TM is more current and in more detail than FM 101-20. Refer to the characteristics pages of each individual aircraft in Section IV. The -20, Chapter 3 of the applicable TM lists all Maximum Allowable Operating Time (MAOT) and Time Between Overhaul (TBO).

Section II. AIRCRAFT EQUIPMENT

2-2. Avionics and Surveillance Equipment Configurations.*

The following avionics and surveillance configurations are typical and may vary depending on production run, changes incorporated through MWO action, and theater of operation in which the aircraft is employed. The abbreviation CPO in this section is defined as "complete provisions only." It indicates that power, space, weight and wiring have been incorporated and considered but the equipment has not been installed.

Source: CERCOM (DRSEL-MME-LAE)

2-2. Avionics and Surveillance Equipment Configurations (Con't).

The following configuration depicts a typically configured AH-1( ). The actual configuration may vary depending on pecular geographic requirements or changes incorporated through MWO action and special purpose alterations.

FUNCTION/TYPE NUMBER	NOMENCLATURE	AH-1G	AH-1S (MODIFIED)	AH-1S (PROD)	AH-1S (ECAS)	AH-1S (MODERNIZED)
INTERCOMM						
C-1611( )/AIC	Intercomm Control	2	2			
C-6533/ARC	Intercomm Control			2	2	2
209-077-204-1	ICS Filter			2	2	2
UHF/AM RADIO						
AN/ARC-51BX consisting of:	Radio Set	1	1			
C-6287/ARC-51BX	Control	1	1			
HD-615/ARC-51X	Cooler	1	1			
ID-1003/ARC	SWR Indicator	1	1			
MT-2653/ARC	Mount	1	1			
RT-742( )/ARC	Receiver-Transmitter	1	1			
AT-1108/ARC	VHF/UHF Antenna	1[1]	1[1]			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-1( )		AH-1G	AH-1S (MODIFIED)	AH-1S (PROD)	AH-1S (ECAS)	AH-1S (MODERNIZED)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
AN/ARC-116( )	Radio Set			2_1		
RT-1167/ARC-164(V)	Radio Set			2_1	1	1
AT-256A/ARC	UHF Antenna			1	1	1
HPF40-01T	UHF Hi Pass Filter			1	1	1
VHF/AM RADIO						
AN/ARC-134 consisting of:	Radio Set					
C-7197/ARC-134	Control	1	1			
MT-3791C/ARC-134	Mount	1	1			
RT-857/ARC-134	Receiver-Transmitter	1	1			
AN/ARC-115( )	Radio Set			3_1	3_1	3_1
RT-1354/ARC-186(V)	Radio Set			3_1	3_1	3_1
AS-3204/ARC	VHF Antenna			1	1	1
AT-1108/ARC	VHF/UHF Antenna	1_1	1_1			
BPF40-03P	VHF Band Pass Filter			1	1	1
VHF/FM RADIO						
AN/ARC-54 consisting of:	Radio Set					
C-3835/ARC-54	Control	4_1	4_1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-1( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	AH-1G	AH-1S (MODIFIED)	AH-1S (PROD)	AH-1S (ECAS)	AH-1S (MODERNIZED)
MT-1535/ARC-54	Mount	4_1	4_1			
RT-348/ARC-54	Receiver-Transmitter	4_1	4_1			
AN/ARC-131 consisting of:	Radio Set					
C-7088/ARC-131	Control	4_1	4_1			
MT-3664/ARC-131	Mount	4_1	4_1			
RT-823/ARC-131	Receiver-Transmitter	4_1	4_1			
AS-2285/ARC	FM Comm Antenna	1	1			
209-075-292-1	FM Homing Antenna	1	1			
AN/ARC-114( )	Radio Set			1	1	1
AS-3205/ARC	FM Homing Antenna			1	1	1
209-077-202-3	FM Comm Antenna Assy			1	1	1
LPF40-02B	FM Low Pass Filter			1	1	1
SECURE VOICE						
MD-736/A	Signal Discriminator	2	2			
MD-1101/A	Audio Threshold Device			1	1	1
MT-3802/ARC	Mount	1	1	1	1	1
C-8157/ARC	Control-Indicator	5_1	5_1	5_1	5_1	5_1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-1( )		AH-1G	AH-1S (MODIFIED)	AH-1S (PROD)	AH-1S (ECAS)	AH-1S (MODERNIZED)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
Z-AHP	Remote Control Unit	5 1	5 1	5 1	5 1	5 1
Z-AHQ	Interface Adapter	5 1	5 1	5 1	5 1	5 1
TSEC/KY-28	Comm Security Set	5CPO	5CPO	5CPO	5CPO	5CPO
TSEC/KY-58	Comm Security Set	5CPO	5CPO	5CPO	5CPO	5CPO
GYRO COMPASS						
AN/ASN-43 consisting of:	Gyro Compass Set					
CN-405/ASN	Compensator	1	1	1	1	1
CN-998( )/ASN-43	Directional Gyro	1	1	1	1	1
T-611/ASN	Compass Transmitter	1	1	1	1	1
C-6347/ASN	Compass Control			1	1	1
ADF						
AN/ARN-83 consisting of:	Direction Finder Set					
AS-1863/ARN-83	Loop Antenna	1	1			
C-6899/ARN-83	Control	1	1			
MT-3605/ARN-83	Mount	1	1			
R-1391/ARN-83	Receiver	1	1			
AN/ARN-89B consisting of:	Direction Finder Set					
AM-4859A/ARN-89	Amplifier			1	1	1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-1( )		AH-1G	AH-1S (MODIFIED)	AH-1S (PROD)	AH-1S (ECAS)	AH-1S (MODERNIZED)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
AS-2108A/ARN-89	Loop Antenna			1	1	1
C-7392A/ARN-89	Control			1	1	1
R-1496A/ARN-89	Receiver			1	1	1
209-030-133-7	Sense Antenna	1	1	1	1	1
VOR/MB/GS						
AN/ARN-123(V)3 consisting of:	Receiving Set					
C-10048/ARN-123(V)	Control			1	1	CPO
MT-4980/ARN-123(V)	Mount			1	1	CPO
R-2023/ARN-123(V)	Receiver			1	1	CPO
AS-1304/ARN	VOR Antenna			1	1	CPO
AS-3188/ARN	GS Antenna			1	1	CPO
AT-640( )/ARN	MB Antenna			1	1	CPO
DOPPLER NAVIGATION						
AN/ASN-128 consisting of:	Doppler Navigation Set					
CP-1252/ASN-128	Computer-Display Unit					1
CV-3338/ASN-128	Signal Data Converter					1
RT-1193/ASN-128	Receiver-Transmitter-Antenna					1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-1( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	AH-1G	AH-1S (MODIFIED)	AH-1S (PROD)	AH-1S (ECAS)	AH-1S (MODERNIZED)
RADAR ALTIMETER						
AN/APN-209( )(V)1 consisting of:	Radar Altimeter Set					
AS-2595/APN-194(V)	Antenna			6 2	2	2
RT-1115( )/APN-209(V)	Receiver-Transmitter-Height Indicator			6 1	1	1
IDENTIFICATION						
AN/APX-72 consisting of:	Transponder Set					
C-6280A(P)/APX	Control	1	1	1	1	
MT-3809/APX-72	Mount	1	1	1	1	
RT-859( )/APX-72	Transponder	1	1	1	1	
MT-3513/APX	Mount (TS-1843)	1	1	1	1	
TS-1843( )/APX	Test Set	1	1	1	1	
AT-884( )/APX	Antenna (Lower)	1	1	1	1	1
AT-741B/A	Antenna (Upper)					1
C-10533/APX-100	Control					1
MT-4811/APX-100	Mount (RT-1157)					1
RT-1157( )/APX-100	Transponder					1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-1( )		AH-1G	AH-1S (MODIFIED)	AH-1S (PROD)	AH-1S (ECAS)	AH-1S (MODERNIZED)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
MT-3949A/U	Mount (KIT-1A)	1	1	1	1	1
KIT-1A/TSEC	IFF Computer	CPO	CPO	CPO	CPO	CPO
RADAR WARNING						
AN/APR-39(V)1 consisting of:	Radar Signal Detecting Set					
AS-2890/APR-39(V)	Blade Antenna			CPO	CPO	CPO
AS-2891/APR-39(V)	Right Spiral Antenna (2 ea)			CPO	CPO	CPO
AS-2892/APR-39(V)	Left Spiral Antenna (2 ea)			CPO	CPO	CPO
C-9326/APR-39(V)	Control			CPO	CPO	CPO
CM-440/APR-39(V)	Comparator			CPO	CPO	CPO
IP-1150/APR-39(V)	Indicator			CPO	CPO	CPO
R-1838/APR-39(V)	Receiver (2 ea)			CPO	CPO	CPO
PROXIMITY WARNING						
YG-1054D1 consisting of:	Proximity Warning System					
10027834-101	Antenna	7_2	7_2	7_2	7_2	7_2
JG1054-AA01	Remote Indicator	7_1	7_1	7_1	7_1	7_1
HG1001-AD01	Receiver-Transmitter	7_1	7_1	7_1	7_1	7_1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-1( )		AH-1G	AH-1S (MODIFIED)	AH-1S (PROD)	AH-1S (ECAS)	AH-1S (MODERNIZED)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
STABILIZATION						
209-074-070-3	Control Panel				1	1
209-074-080-103	Sensor Amplifier				1	1
209-074-084-1	Control Panel			1		
209-074-092-1	Armament Compensator				1	1
570-074-010-11	Sensor Amplifier	1	1	1		
570-074-060-1	Control Panel	1	1			
570-074-131-3	Pylon Compensator	1	1	1		
570-074-315-3	Rate Gyro Sensor				1	1
COUNTERMEASURES						
AN/ALQ-136(V)1 consisting of:	Countermeasures Set					
AS-3007/ALQ-136	Antenna (2 ea)					CPO
RT-1149/ALQ-136	Receiver-Transmitter					CPO
AN/ALQ-144(V)3 consisting of:	Countermeasures Set					
C-9576/ALQ-144	Operators Control Unit					CPO
CY-7611/ALQ-144	Transit, Case					CPO
T-1360(V)1/ALQ-144	Transmitter					CPO

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-1( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	AH-1G	AH-1S (MODIFIED)	AH-1S (PROD)	AH-1S (ECAS)	AH-1S (MODERNIZED)
LASER TRACKER						
AN/AAS-32 consisting of:	Airborne Laser Tracker Set					
C-9641/AAS-32	Control					CPO
MX-9623/AAS-32	Electronic Components Assy					CPO
R-1960/AAS-32	Receiver-Tracker					CPO
POWER SOURCES						
BB-649( )/A	Battery	1	1	1	1	1
PP-6508/U	Static Inverter	1				
PP-7274( )/A	Static Inverter		1	1	1	1
PU-543( )/A	Inverter	1	1	1		
MISCELLANEOUS						
AM-3209/ASN	Servoamplifier	1	1			
CN-1314/A	Displacement Gyro	1				
CN-1497/A	Displacement Gyro		1	1	1	1
ID-48/ARN	Course Indicator	1	1			
ID-250( )/ARN	Radio Magnetic Indicator	1	1			
ID-998/ASN	Radio Magnetic Indicator	1	1			
ID-2103/A	Horz Situation Indicator			1	1	1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-1( )		AH-1G	AH-1S (MODIFIED)	AH-1S (PROD)	AH-1S (ECAS)	AH-1S (MODERNIZED)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
ID-2104/A	Attitude Direction Indicator			1	1	1
ID-2105/A	Radio Magnetic Indicator			[8]CPO	[8]CPO	[8]CPO
MC-1	Rate Gyro	1	1			
TRU-2A/A	Rate Gyro			1	1	1
209-077-081-3	HSI Display Control Panel			1	1	
209-077-081-5	HSI Display Control Panel					1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

NOTES:

1. The AT-1108 is used with both the UHF/AM and VHF/AM systems.
2. The AN/ARC-116 was installed in lieu of the RT-1167/ARC-164 in a few early FY 76 aircraft.
3. The AN/ARC-115 and RT-1354/ARC-186 are interchangeable; therefore, either may be installed but not both.
4. The AN/ARC-54 and AN/ARC-131 are interchangeable; therefore, either may be installed but not both.
5. Either provisions for the KY-28 (including C-8157) or the KY-58 (including Z-AHP and Z-AHQ) are installed not both.
6. CPO in FY 76 aircraft.
7. Equipment installed only in aircraft located at Ft. Bragg, Ft. Campbell, Ft. Hood and Ft. Rucker.
8. Equipment may be installed in some aircraft.

GENERAL NOTE: The AH-1S (Modified) configuration pertains to converted AH-1G/Q aircraft. The AH-1S (PROD) configuration pertains to new production aircraft FY 76 thru 77-22762. The AH-1S (ECAS) configuration pertains to new production aircraft 77-22763 thru 78-23092. The AH-1S (Modernized) configuration pertains to new production aircraft 78-23093 and subsequent, as well as any aircraft, regardless of serial number, that has been fully modernized.

APPLICABLE AIRCRAFT AVIONICS MANUALS:

TM 11-1520-221-20 (Pertains to AH-1G and S Modified)
TM 11-1520-221-20P (Pertains to AH-1G and S Modified)
TM 11-1520-221-34 (Pertains to AH-1G and S Modified)
TM 11-1520-221-34P (Pertains to AH-1G and S Modified)
TM 11-1520-236-20 (Pertains to AH-1S PROD, ECAS and Modernized)
TM 11-1520-236-20P (Pertains to AH-1S PROD, ECAS and Modernized)
TM 11-1520-236-24P-1 (Pertains to AH-1S PROD, ECAS and Modernized)
TM 11-1520-236-34 (Pertains to AH-1S PROD, ECAS and Modernized)
TM 11-1520-236-34P (Pertains to AH-1S PROD, ECAS and Modernized)
TM 11-1520-239-20P (Pertains to AH-1S Modernized)
TM 11-1520-239-34P (Pertains to AH-1S Modernized)

2-2. Avionics and Surveillance Equipment Configurations (Con't).

The following configuration depicts a typically configured CH-54( ). The actual configuration may vary depending on peculiar geographic requirements or changes incorporated through MWO action and special purpose alterations.

FUNCTION/TYPE NUMBER	NOMENCLATURE	CH-54A	CH-54B			
INTERCOMM						
C-1611( )/AIC	Intercomm Control	5	5			
6490-60240-013	Interphone Junction Box	1	1			
UHF/AM RADIO						
AN/ARC-51BX consisting of:	Radio Set					
C-6287/ARC-51BX	Control	1	1			
HD-615/ARC-51X	Cooler	1	1			
ID-1003/ARC	SWR Indicator	1	1			
MT-2653/ARC	Mount	1	1			
RT-742( )/ARC	Receiver-Transmitter	1	1			
AT-1108/ARC	UHF/VHF Antenna	1[1]	1[1]			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-54( )		CH-54A	CH-54B			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
VHF/AM RADIO						
AN/ARC-134( ) consisting of:	Radio Set					
C-7197/ARC-134	Control	1	1			
MT-3791( )/ARC-134	Mount	1	1			
RT-857/ARC-134	Receiver-Transmitter	1	1			
AT-1108/ARC	UHF/VHF Antenna	1 1	1 1			
VHF/FM RADIO						
AN/ARC-54 consisting of:	Radio Set					
C-3835/ARC-54	Control	2 1	2 1			
MT-1535/ARC-54	Mount	2 1	2 1			
RT-348/ARC-54	Receiver-Transmitter	2 1	2 1			
AN/ARC-131 consisting of:	Radio Set					
C-7088/ARC-131	Control	2 1	2 1			
MT-3664/ARC-131	Mount	2 1	2 1			
RT-823/ARC-131	Receiver-Transmitter	2 1	2 1			
AS-1703/AR	FM Comm Antenna	1	1			
CU-942( )/ARC	FM Antenna Coupler	1	1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-54( )						
FUNCTION/TYPE NUMBER	NOMENCLATURE	CH-54A	CH-54B			
AS-1922/ARC	FM Homing Antenna	1	1			
HF RADIO						
AN/ARC-102 consisting of:	Radio Set					
C-3940/ARC-94	Control	CPO	CPO			
PP-3702/ARC-102	Inverter-Mounting	CPO	CPO			
RT-698/ARC-102	Receiver-Transmitter	CPO	CPO			
CU-991/AR	HF Antenna Coupler	[3]CPO				
CU-1658( )/A	HF Antenna Coupler	[3]CPO	CPO			
MT-1719/AR	Mount (CU-991)	[3]CPO				
MT-3772A/A	Mount (CU-1658)	[3]CPO	CPO			
6460-65001-011	HF Antenna	CPO	CPO			
SECURE VOICE						
MD-736/A	Signal Distriminator	3	3			
MT-3802/ARC	Mount	1	1			
C-8157/ARC	Control-Indicator	1	1			
TSEC/KY-28	Comm Security Set	CPO	CPO			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-54( )		CH-54A	CH-54B			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
GYRO COMPASS						
AN/ASN-43 consisting of:	Gyro Compass Set					
CN-405/ASN	Compensator	1	1			
CN-998( )/ASN	Directional Gyro	1	1			
T-611/ASN	Compass Transmitter	1	1			
ADF						
AN/ARN-83 consisting of:	Direction Finder Set					
AS-1863/ARN-83	Loop Antenna	1	1			
C-6899/ARN-83	Control	1	1			
MT-3605/ARN-83	Mount	1	1			
R-1391/ARN-83	Receiver	1	1			
6460-65010-041	ADF Sense Antenna	1	1			
VOR						
AN/ARN-82 consisting of:	Receiving Set					
C-6873B/ARN-82	Control	1	1			
ID-1347C/ARN-82	Course Indicator	1	1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-54( )		CH-54A	CH-54B			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
MT-3600/ARN-82	Mount	1	1			
R-1388( )/ARN-82	Receiver	1	1			
AS-1304/ARN	VOR Antenna	1	1			
MB/GS						
R-1963/ARN	Radio Receiver	4 1	4 1			
MT-4835/ARN	Mount (R-1963)	4 1	4 1			
AT-326/ARN	GS Antenna	4 1	4 1			
AT-640( )/ARN	MB Antenna	4 1	4 1			
IDENTIFICATION						
AN/APX-72 consisting of:	Transponder Set					
C-6280A(P)/APX	Control	1	1			
MT-3809/APX-72	Mount	1	1			
RT-859( )/APX-72	Transponder	1	1			
MT-3513/APX	Mount (TS-1843)	1	1			
TS-1843( )/APX	Test Set	1	1			
AT-884( )/APX	Antenna	1	1			
MT-3949A/U	Mount (KIT-1A)	1	1			
KIT-1A/TSEC	IFF Computer	CPO	CPO			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-54( )		CH-54A	CH-54B			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
VOICE WARNING						
AN/ASH-19 consisting of:	Voice Warning Set					
MT-3290/ASH-19	Mount		1			
RP-139/ASH-19	Reproducer		1			
TW-333/ASH-19	Message Tapes		2			
AN/ASH-23 consisting of:	Sound Recorder Set					
C-8203/ASH-23	Controller		1			
MA-27/ASH-23	Magazine		1			
CV-2809/ASH-19	Signal Adapter		1			
ATTITUDE/INDICATING						
CN-1179/ASW	Displacement Gyro	5_1				
C-7269/ASW	Control-Monitor	5_1				
CN-1314/A	Displacement Gyro	5_2	2			
PERFORMANCE INDICATING						
6490-60500-041	Cruise Guide Amplifier		1			
S1545-65273-1	Performance Indicator		1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-54( )						
FUNCTION/TYPE NUMBER	NOMENCLATURE	CH-54A	CH-54B			
STABILIZATION						
AN/ASW-29 consisting of:	Automatic Flight Control System					
AM-3782/ASW-23	Filter Amplifier	1				
AM-4808/ASW-29	Control Amplifier	1				
C-7263/ASW-29	Follow-Up Control	1				
C-7264/ASW-29	Servo Control	1				
C-7265/ASN-29	Follow-Up Control	1				
C-7266/ASW-29	Altitude Control	1	[6]1			
HD-769/ASW-29	Dehydrator Unit	1	[6]1			
ID-1464/ASW-29	Stabilization Indicator	1				
SN-409/ASW-29	Transmitter Synchro	2				
SN-410/ASW-29	Transmitter Synchro	1	[6]1			
C-7267/ASW	Hyrdraulic Servovalve	1				
C-7268/ASW	Hydraulic Servovalve	1				
AM-6279/ASW	Control Amplifier		1			
AM-6280/ASW	Control Amplifier		1			
C-8476/ASW	Follow-Up Control		1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-54( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	CH-54A	CH-54B			
C-8477/ASW	Monitor Control		1			
C-8478/ASW	Engaging Control		1			
CN-1325/ASW	Rate Gyro		4			
ID-1720/ASW	Stabilization Indicator		1			
MX-8611/ASW	Accelerometer		2			
SN-441/ASW	Transmitter Synchro		2			
SN-442/ASW	Synchronizer		2			
POWER SOURCE						
BB-434( )/A	Battery	1	1			
PU-543( )/A	Inverter	1	1			
MISCELLANEOUS						
AM-3209/ASN	Servoamplifier	1	1			
ID-250( )/ARN	Radio Magnetic Indicator	1	1			
ID-998/ASN	Radio Magnetic Indicator	1	1			

2-2. **Avionics and Surveillance Equipment Configurations (Con't).**

NOTES:

1. The AT-1108 is used with both the UHF/AM and VHF/AM systems.
2. The AN/ARC-54 and AN/ARC-131 are interchangeable; therefore, either may be installed but not both.
3. Provisions for the CU-991 and MT-1719 were replaced by provisions for the CU-1658 and MT -3772 beginning with FY 67 aircraft.
4. Proposed retrofit installation.
5. The CN-1179 and C-7269 are installed in some aircraft in lieu of CN-1314.
6. These components of the AN/ASW-29 are also components of the CH-54B AFCS which has no system designation.

APPLICABLE AIRCRAFT AVIONICS MANUALS:

TM 11-1520-217-20 (Pertains to CH-54A)
TM 11-1520-217-20-2 (Pertains to CH-54B)
TM 11-1520-217-20P (Pertains to CH-54A)
TM 11-1520-217-20P-2 (Pertains to CH-54B)
TM 11-1520-217-34P (Pertains to CH-54A)
TM 11-1520-217-34P-2 (Pertains to CH-54B)
TM 11-1520-217-35 (Pertains to CH-54A)
TM 11-1520-217-35-2 (Pertains to CH-54B)

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-64( )		AH-64A				
FUNCTION/TYPE NUMBER	NOMENCLATURE					
INTERCOMM						
C-10414/ARC	Intercomm Control	2				
UHF/AM RADIO						
RT-1167/ARC-164	Radio Set	1				
VHF/AM RADIO						
RT-1354/ARC-186	Radio Set	1				
VHF/FM RADIO						
RT-1354/ARC-186	Radio Set	1				
CM-492/ARC-186	FM Homing Unit	1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-64( )		AH-64A				
FUNCTION/TYPE NUMBER	NOMENCLATURE					
SECURE VOICE						
C-8157/ARC	Control-Indicator	1				
MT-3802/ARC	Mount	1				
TSEC/KY-28	Comm Security Set	CPO				
AHRS						
LR-80	Attitude Heading Ref-Sys	1				
ADF						
AN/ARN-89B consisting of:	Direction Finder Set					
AM-4859A/ARN-89	Amplifier	1				
AS-2108A/ARN-89	Loop Antenna	1				
C-7392A/ARN-89	Control	1				
R-1496A/ARN-89	Receiver	1				
DOPPLER NAV						
AN/ASN-128 consisting of:	Doppler Navigation Set					
CP-1252/ASN-128	Computer-Display Unit	1				
CV-3338/ASN-128	Signal Data Converter	1				
RT-1193/ASN-128	Receiver-Transmitter-Antenna	1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-64( )		AH-64A				
FUNCTION/TYPE NUMBER	NOMENCLATURE					
RADAR ALTIMETER						
AN/APN-209A(V)2	Radar Altimeter Set					
AS-2595/APN-194(V)	Antenna	2				
ID-1917/APN-209(V)	Height Indicator	1				
RT-1115A/APN-209(V)	Receiver-Transmitter-Height Indicator	1				
IDENTIFICATION						
RT-1296( )/APX-100	Transponder	1				
MT-3949A/U	Mount (KIT-1A)	1				
KIT-1A/TSEC	IFF Computer	CPO				
AT-741( )/A	Antenna	2				
RADAR WARNING						
AN/APR-39(V)1 consisting of:	Radar Signal Detecting Set					
AS-2890/APR-39(V)	Blade Antenna	CPO				
AS-2891/APR-39(V)	Spiral Antenna (RH) (2 ea)	CPO				
AS-2892/APR-39(V)	Spiral Antenna (LH) (2 ea)	CPO				
C-9326/APR-39(V)	Control	CPO				
CM-440/APR-39(V)	Comparator	CPO				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

AH-64( )		AH-64A				
FUNCTION/TYPE NUMBER	NOMENCLATURE					
IP-1150/APR-39(V)	Indicator	CPO				
R-1838/APR-39(V)	Receiver (2 each)	CPO				
LASER DETECTION						
AN/AVR-2 consisting of:	Laser Detector Set					
CM-493/AVR-2	Interface Comparator	CPO				
SU-130/AVR-2	Sensor (2 each)	CPO				
COUNTERMEASURES						
AN/ALQ-136(V)1 consisting of:	Countermeasures Set					
AS-3007/ALQ-136	Antenna (2 each)	CPO				
RT-1149/ALQ-136	Receiver-Transmitter	CPO				
AN/ALQ-144(V)3 consisting of:	Countermeasures Set					
C-9576/ALQ-144	Operators Control Unit	CPO				
CY-7611/ALQ-144	Transit Case	CPO				
T-1360(V)1/ALQ-144	Transmitter	CPO				
POWER SOURCES						
EE2282	Battery	1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

APPLICABLE AIRCRAFT AVIONICS MANUALS:

TM 11-1520-238 Series (To be published)

2-2. Avionics and Surveillance Equipment Configurations (Con't).

The following configuration depicts a typcially configured CH-47( ). The actual configuration may vary depending on peculiar geographic requirements or changes incorporated through MWO action and special purpose alterations.

FUNCTION/TYPE NUMBER	NOMENCLATURE	CH-47A	CH-47B	CH-47C	CH-47D	
INTERCOMM						
C-1611( )/AIC	Intercomm Control	6	6	6		
C-6533/ARC	Intercomm Control				6	
114E3058-( )	Interphone Junction Box	1				
114E3060-( )	Interphone Junction Box		1	1		
145E3118-( )	Interphone Junction Box				2	
UHF/AM RADIO						
AN/ARC-51BX consisting of:	Radio Set					
C-6287/ARC-51BX	Control	1 1	1 1	2 1		
HD-615/ARC-51X	Cooler	1 1	1 1	2 1		
ID-1003/ARC	SWR Indicator	1 1	1 1	2 1		

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-47( )		CH-47A	CH-47B	CH-47C	CH-47D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
MT-2653/ARC	Mount	1 1	1 1	2 1		
RT-742( )/ARC	Receiver-Transmitter	1 1	1 1	2 1		
RT-1167/ARC-164(V)	Radio Set			2 1	1	
AT-1108/ARC	VHF/UHF Antenna	3 1	3 1	3 1		
AT-256( )/ARC	UHF Antenna				1	
HPF40-01T	UHF Hi Pass Filter				1	
VHF/AM RADIO						
AN/ARC-73A consisting of:	Radio Set					
C-4074/ARC-73	Control	1 1	1 1			
MT-2699/ARC-73	Mount	1 1	1 1			
R-1123/ARC-73	Receiver	1 1	1 1			
T-879/ARC-73	Transmitter	1 1	1 1			
T-366/ARC	Transmitter	1	1			
C-4209/ARC	Control	1	1			
MT-1142/ARC	Mount (T-366)	1	1			
PP-2792/ARN-30	Power Supply	1	1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-47( )						
FUNCTION/TYPE NUMBER	NOMENCLATURE	CH-47A	CH-47B	CH-47C	CH-47D	
AN/ARC-134( ) consisting of:	Radio Set					
C-7197/ARC-134	Control			1		
MT-3791( )/ARC-134	Mount			1		
RT-857/ARC-134	Receiver-Transmitter			1		
RT-1354/ARC-186(V)	Radio Set				15[1]	
AT-1108/ARC	VHF/UHF Antenna	3[1]	3[1]	3[1]		
S65-8280-30	VHF/AM-FM Antenna				1	
BPF40-03P	VHF Band Pass Filter				1	
VHF/FM RADIO						
AN/ARC-54 consisting of:	Radio Set					
C-3835/ARC-54	Control	4[1]	4[1]	4[1]		
MT-1535/ARC-54	Mount	4[1]	4[1]	4[1]		
RT-348/ARC-54	Receiver-Transmitter	4[1]	4[1]	4[1]		
AN/ARC-131 consisting of:	Radio Set					
C-7088/ARC-131	Control	4[1]	4[1]	4[1]		
MT-3664/ARC-131	Mount	4[1]	4[1]	4[1]		

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-47( )						
FUNCTION/TYPE NUMBER	NOMENCLATURE	CH-47A	CH-47B	CH-47C	CH-47D	
RT-823/ARC-131	Receiver-Transmitter	[4]1	[4]1	[4]1		
RT-1354/ARC-186(V)	Radio Set				[15]1	
CM-492/ARC-186(V)	FM Homing Unit				1	
AS-1703/AR	FM Comm Antenna	1	1	1		
CU-942( )/ARC	FM Antenna Coupler	1	1	1		
AS-1922/ARC	FM Homing Antenna	1	1	1	1	
S65-8280-30	VHF/AM-FM Antenna				1	
LPF40-02B	FM Low Pass Filter				1	
HF RADIO						
AN/ARC-102 consisting of:	Radio Set					
C-3940/ARC-94	Control	CPO	CPO	CPO	CPO	
RT-698/ARC-102	Receiver-Transmitter	CPO	CPO	CPO	CPO	
MT-2641/ARC	Mount (RT-698)	1	1	1	1	
CU-991/AR	HF Antenna Coupler	CPO	CPO	[5]CPO		
CU-1658( )/A	HF Antenna Coupler			[5]CPO	CPO	
MT-1719/AR	Mount (CU-991)	CPO	CPO	[5]CPO		
MT-3772A/A	Mount (CU-1658)			[5]CPO	CPO	
114E3094-( )	HF Antenna	CPO	CPO	CPO	1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-47( )						
FUNCTION/TYPE NUMBER	NOMENCLATURE	CH-47A	CH-47B	CH-47C	CH-47D	
SECURE VOICE						
MD-736/A	Signal Discriminator	3	3	3		
MD-1047/A	Audio Threshold Device				1	
MT-3802/ARC ✓	Mount	1	1	1	1	
C-8157/ARC ✓	Control-Indicator	6_1	6_1	6_1	6_1	
Z-AHP ✓	Remote Control Unit	6_1	6_1	6_1	6_1	
Z-AHQ ✓	Interface Adapter	6_1	6_1	6_1	6_1	
TSEC/KY-28 ✓	Comm Security Set	6_{CPO}	6_{CPO}	6_{CPO}	6_{CPO}	
TSEC/KY-58 ✓	Comm Security Set	6_{CPO}	6_{CPO}	6_{CPO}	6_{CPO}	
GYRO COMPASS						
J-2 consisting of:	Gyro Compass Set					
A-2	Amplifier	7_1				
CN-405/ASN	Compensator	7_1				
S-3( )	Gyro Control	7_1				
T-611/ASN	Compass Transmitter	7_1				
AN/ASN-43 consisting of: ✓	Gyro Compass Set					
CN-405/ASN	Compensator	7_1	1	1	1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-47( )		CH-47A	CH-47B	CH-47C	CH-47D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
CN-998( )/ASN	Directional Gyro	7 1	1	1	1	
T-611/ASN	Compass Transmitter	7 1	1	1	1	
C-8021A/ASN-75	Compass Control				1	
ADF						
AN/ARN-59 consisting of:	Direction Finder Set					
AT-780/ARN	Loop Antenna	8 1				
C-2275/ARN	Control	8 1				
DY-150/ARN	Dynamotor	8 1				
ID-637/ARN	Azimuth Indicator	8 1				
MT-2018/ARN	Mount (R-836)	8 1				
MT-2019/ARN	Mount (DY-150)	8 1				
R-836/ARN	Receiver	8 1				
AS-1870/ARN	ADF Sense Antenna	8 1				
AN/ARN-83 consisting of:	Direction Finder Set					
AS-1863/ARN-83	Loop Antenna	8 1	1	1		
C-6899/ARN-83	Control	8 1	1	1		
MT-3605/ARN-83	Mount	8 1	1	1		

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-47( )		CH-47A	CH-47B	CH-47C	CH-47D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
R-1391/ARN-83	Receiver	8 1	1	1		
AS-1869/ARN	ADF Sense Antenna	8 1	1	1	1	
AN/ARN-89B consisting of:	Direction Finder Set					
AM-4859A/ARN-89	Amplifier				1	
AS-2108A/ARN-89	Loop Antenna				1	
C-7392A/ARN-89	Control				1	
R-1496A/ARN-89	Receiver				1	
VOR/MB/GS						
AN/ARN-30E consisting of:	Receiving Set (VOR)					
AS-580A/ARN-30	Antenna	9 1				
C-3436A/ARN-30E	Control	9 1				
CV-265A/ARN-30A	Converting	9 1				
ID-453/ARN-30	Course Indicator	9 1				
MT-1174/ARN-30A	Mount (R-1021)	9 1				
MT-1175/ARN-30A	Mount (CV-265)	9 1				
PP-2792/ARN-30D	Power Supply	9 1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-47( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	CH-47A	CH-47B	CH-47C	CH-47D	
R-1021/ARN-30D	Receiver	9[1]				
CV-1275/ARN	Converter	9[1]				
MT-2659/ARN	Mount (CV-1275)	9[1]				
AN/ARN-82A consisting of:	Receiving Set (VOR)					
C-6873( )/ARN-82	Control	9[1]	1	1		
ID-1347( )/ARN-82	Course Indicator	9[1]	1	1		
MT-3600/ARN-82	Mount	9[1]	1	1		
R-1388A/ARN-82	Receiver	9[1]	1	1		
AS-1304/ARN	VOR Antenna	9[1]	1	10[1]		
137X-1	VOR Antenna			10[1]	1	
R-1041( )/ARN	Radio Receiver (MB)	CPO	CPO	CPO		
MT-2292/ARN	Mount (R-1041)	CPO	CPO	CPO		
AT-640( )/ARN	MB Antenna	1	1	1	1	
AN/ARN-123(V)1 consisting of:	Receiving Set (VOR/MB/GS)					
C-10048/ARN-123(V)	Control				1	
MT-4834/ARN-123(V)	Mount				1	
R-2023/ARN-123(V)	Receiver				1	
AT-326/ARN	GS Antenna				1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-47( )		CH-47A	CH-47B	CH-47C	CH-47D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
DOPPLER NAVIGATION						
AN/ASN-128 consisting of:	Doppler Navigation Set					
CP-1252/ASN-128	Computer-Display Unit				1	
CV-3338/ASN-128	Signal Data Converter				1	
RT-1193/ASN-128	Receiver-Transmitter-Antenna				1	
RADAR ALTIMETER						
AN/APN-209( )(V)2 consisting of:	Radar Altimeter Set					
AS-2595/APN-194(V)	Antenna			11_2	2	
ID-1917/APN-209(V)	Height Indicator			11_1	1	
RT-1115( )/APN-209(V)	Receiver-Transmitter-Height Indicator			11_1	1	
IDENTIFICATION						
AN/APX-72 consisting of:	Transponder Set					
C-6280A(P)/APX	Control	1	1	1		
MT-3809/APX-72	Mount	1	1	1		

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-47( )		CH-47A	CH-47B	CH-47C	CH-47D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
RT-859( )/APX-72	Transponder	1	1	1		
TS-1843( )/APX	Test Set	1	1	1		
MT-3513/APX	Mount (TS-1843)	1	1	1		
AT-884( )/APX	Antenna	1	1	1	1	
AT-740/A	Antenna				1	
RT-1285( )/APX-100	Transponder				1	
MT-3949A/U	Mount (KIT-1A)	1	1	1	1	
KIT-1A/TSEC	IFF Computer	CPO	CPO	CPO	CPO	
ATTITUDE INDICATING						
CN-811( )/ASN	Displacement Gyro	12	12	12	12	
9000F	Displacement Gyro	12	12	12	12	
RADAR WARNING						
AN/APR-39(V)1 consisting of	Radar Signal Detecting Set					
AS-2890/APR-39(V)	Blade Antenna			11 CPO	CPO	
AS-2891/APR-39(V)	Right Spiral Antenna (2 ea)			11 CPO	CPO	
AS-2892/APR-39(V)	Left Spiral Antenna (2 ea)			11 CPO	CPO	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-47( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	CH-47A	CH-47B	CH-47C	CH-47D	
C-9326/APR-39(V)	Control			[11] CPO	CPO	
CM-440/APR-39(V)	Comparator			[11] CPO	CPO	
IP-1150/APR-39(V)	Indicator			[11] CPO	CPO	
R-1838/APR-39(V)	Receiver (2 ea)			[11] CPO	CPO	
PROXIMITY WARNING						
YG-1054D1 consisting of:	Proximity Warning System					
10040489-101A	Antenna		[13] 3	[13] 3		
HG1001-AD01	Receiver Transmitter		[13] 1	[13] 1		
STABILIZATION						
114E2186-( )	Speed Trim Amplifier	1	1	1	Note 14	
114E3030-( )	SAS Amplifier	2	2	2	Note 14	
COUNTERMEASURES						
AN/ALQ-156(V) consisting of:	Countermeasures Set					
AS-3149/ALQ-156(V)	Antenna (2 ea)			[11] CPO	CPO	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

CH-47( )		CH-47A	CH-47B	CH-47C	CH-47D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
C-10131/ALQ-156(V)	Control-Indicator			[11] CPO	CPO	
RT-1220/ALQ-156(V)	Receiver-Transmitter			[11] CPO	CPO	
POWER SOURCE						
BB-432/A	Battery	1	1	1		
BB-432B/A	Battery				1	
145ES014-1	Battery Charger				1	
MISCELLANEOUS						
AM-3209/ASN	Servoamplifier	1	1	1		
ID-250( )/ARN	Radio Magnetic Indicator	1	1	1		
ID-998/ASN	Radio Magnetic Indicator	1	1	1		
ID-2103/A	Horizontal Situation Indicator				2	
PP-7618/A	Power Supply (5v)			[11] 2		

2-2. Avionics and Surveillance Equipment Configurations (Con't).

NOTES:

1. Provisions to the AN/ARC-51 and AN/ARC-73 are superimposed; therefore, either radio system may be installed but not both.
2. The RT-1167 is a proposed retrofit replacement for the AN/ARC-51.
3. The AT-1108 is used with both the UHF/AM and VHF-AM systems.
4. The AN/ARC-54 and AN/ARC-131 are interchangeable; therefore, either may be installed but not both.
5. Provisions for the CU-991/MT-1719 were replaced by provisions for the CU-1658/MT-3772 beginning with 68-15858.
6. Either provisions for the KY-28 (including C-8157) or the KY-58 (including Z-AHP and Z-AHQ) are installed, not both.
7. The J-2 system was replaced by the AN/ASN-43 beginning with FY 65 aircraft. The CN-405 and T-611 are common to both.
8. The AN/ARN-59 system (including the AS-1870) was replaced by the AN/ARN-83 (including the AS-1869) beginning with 66-087.
9. The AN/ARN-30 system, (including the CV-1275) was replaced by the AN/ARN-82 (including the AS-1304) beginning with 66-087).
10. The 137X-1 is a retrofit replacement for the AS-1304 on aircraft equipped with fiber glass rotor blades.
11. Retrofit installation.
12. The CN-811( ) and 9000F are interchangeable; therefore, either may be installed.
13. Equipment installed only in aircraft located at Ft. Bragg, Ft. Campbell, Ft. Hood and Ft. Rucker.
14. The stablization system in the CH-47D is the logistic responsibility of TSARCOM. Refer to TM 55-1520-240 series.
15. The RT-1354 can be used in either the VHF/AM or VHF/FM mode.

APPLICABLE AIRCRAFT AVIONICS MANUALS:

TM 11-1520-209-20 (Pertains to CH-47A/B/C)
TM 11-1520-209-20P (Pertains to CH-47A/B/C)
TM 11-1520-209-34 (Pertains to CH-47A/B/C)
TM 11-1520-209-34P (Pertains to CH-47A/B/C)
TM 11-1520-240 Series (To be published) (Pertains to CH-47D)

2-2. Avionics and Surveillance Equipment Configurations (Con't).

The following configuration depicts a typically configured OH-6A. The actual configuration may vary depending on peculiar geographic requirements or changes incorporated through MWO action and special purpose alterations.		OH-6A (FY 65-67, SER I,II)	OH-6A (FY 68-69, SER III)			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
INTERCOMM						
C-1611( )/AIC	Intercomm Control	3				
C-6533/ARC	Intercomm Control		3			
UHF/AM RADIO						
AN/ARC-51BX consisting of:	Radio Set					
C-6287/ARC-51BX	Control	4[1]	1[1]			
HD-615/ARC-51X	Cooler	4[1]	1[1]			
ID-1003/ARC	SWR Indicator	4[1]	1[1]			
MT-2653/ARC	Mount	4[1]	1[1]			
RT-742( )/ARC	Receiver-Transmitter	4[1]	1[1]			
AN/ARC-116( )	Radio Set		[1,2,] 3			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OH-6A		OH-6A (FY 65-67, SER I, II)	OH-6A (FY 68-69, SER III)			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
RT-1167/ARC-164	Radio Set		3 1			
VHF/AM RADIO						
AN/ARC-111 consisting of:	Radio Set					
AM-4489/ARC-111	Amplifier-Power Supply	4 CPO				
MT-3592/ARC-111	Mount	4 CPO				
RT-802/ARC-111	Receiver-Transmitter	4 CPO				
AN/ARC-115( )	Radio Set		2,5 1			
RT-1354/ARC-186	Radio Set		5 1			
VHF/FM RADIO						
AN/ARC-54 consisting of:	Radio Set					
C-3835/ARC-54	Control	6 1				
MT-1535/ARC-54	Control	6 1				
RT-348/ARC-54	Receiver-Transmitter	6 1				
AN/ARC-131 consisting of:	Radio Set					
C-7088/ARC-131	Mount	6 1				
MT-3664/ARC-131	Mount	6 1				
RT-823/ARC-131	Receiver-Transmitter	6 1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OH-6A		OH-6A (FY 65-67, SER I, II)	OH-6A (FY 68-69, SER III)			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
AN/ARC-114( )	Radio Set (#1 FM)		[2]1			
AN/ARC-114( )	Radio Set (#2 FM)		[2]CPO			
CU-1759/ARC	FM Antenna Coupler	1				
CU-1794/ARC	#1 FM Homing Transformer		2			
CU-1796/ARC	#1 FM Homing Network		1			
CU-1893/ARC	#1 FM Antenna Coupler		1			
AS-1703/AR	#2 FM Comm Antenna		1			
CU-1894/ARC	#2 FM Antenna Coupler		1			
SECURE VOICE						
C-8157/ARC	Control-Indicator		1			
369A6471	Mount (KY-28)		1			
TSEC/KY-28	Comm Security Set		CPO			
GYRO COMPASS						
AN/ASN-43 consisting of:	Gyro Compass Set					
CN-405/ASN	Compensator	1	1			
CN-998( )/ASN	Directional Gyro	1	1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OH-6A		OH-6A (FY 65-67, SER I, II)	OH-6A (FY 68-69, SER III)			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
T-611/ASN	Compass Transmitter	1	1			
ADF						
AN/ARN-83 consisting of:	Direction Finder Set					
AS-1863/ARN-83	Loop Antenna	1				
C-6899/ARN-83	Control	1				
MT-3605/ARN-83	Mount	1				
R-1391/ARN-83	Receiver	1				
AN/ARN-89( ) consisting of:	Direction Finder Set					
AM-4859( )/ARN-89	Amplifier		1			
AS-2108( )/ARN-89	Loop Antenna		1			
C-7392( )/ARN-89	Control		1			
R-1496( )/ARN-89	Receiver		1			
IDENTIFICATION						
AN/APX-72 consisting of:	Transponder Set					
C-6280A(P)/APX	Control	7 1	1			
MT-3809/APX-72	Mount	7 1	1			
RT-859( )/APX-72	Transponder	7 1	1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OH-6A		OH-6A (FY 65-67, SER I, II)	OH-6A (FY 68-69, SER III)			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
MT-3513/APX	Mount (TS-1843)	[7]1	1			
TS-1843( )/APX	Test Set	[7]1	1			
AT-884( )/APX	Antenna	[7]1	1			
369A6472	Mount (KIT-1A)		1			
MT-3949A/U	Mount (KIT-1A)	[7]1				
KIT-1A/TSEC	IFF Computer	[7]CPO	CPO			
POWER SOURCES						
BB-641/A	Battery	1				
BB-678/A	Battery		1			
PP-6674/A	Static Inverter		1			
369A4554	Static Inverter	1				
MISCELLANEOUS						
ID-1351/A	HRB Indicator	1	1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

NOTES:

1. The AN/ARC-51 was temporarily installed in lieu of the AN/ARC-116 in some aircraft.
2. Wiring provisions exist for 2 each AN/ARC-114, 1 each AN/ARC-115 and 1 each AN/ARC-116. However the maximum number of sets that can be installed at any given time is limited to 3 each, i.e., 1 each AN/ARC-114, 115 or 116 or 2 each AN/ARC-114 and 1 each AN/ARC-115 or 2 each AN/ARC-114 and 1 each AN/ARC-116.
3. The AN/ARC-116 and RT-1167 are interchangeable; therefore, either may be installed but not both.
4. Provisions for the AN/ARC-51 and AN/ARC-111 are superimposed; therefore, either system may be installed but not both.
5. The AN/ARC-115 and RT-1354 are interchangeable; therefore, either may be installed but not both.
6. The AN/ARC-54 and AN/ARC-131 are interchangeable; therefore, either may be installed but not both.
7. Retrofit installation.

APPLICABLE AIRCRAFT MANUALS:

TM 11-1520-214-20 (Pertains to OH-6A FY 65-67)
TM 11-1520-214-20-1 (Pertains to OH-6A FY 68-69)
TM 11-1520-214-20P (Pertains to OH-6A FY 65-69)
TM 11-1520-214-20P-1 (Pertains to OH-6A FY 68-69)
TM 11-1520-214-34 (Pertains to OH-6A FY 65-67)
TM 11-1520-214-34-1 (Pertains to OH-6A FY68-69)
TM 11-1520-214-34P (Pertains to OH-6A FY 65-67)
TM 11-1520-214-34P-1 (Pertains to OH-6A FY 68-69)

2-2. Avionics and Surveillance Equipment Configurations (Con't).

The following configuration depicts a typically configured OH-58( ). The actual configuration may vary depending on peculiar geographic requirements or changes incorporated through MWO action and special purpose alterations.		OH-58A	OH-58C	OH-58D (AHIP)		
FUNCTION/TYPE NUMBER	NOMENCLATURE					
INTERCOMM						
C-6533/ARC	Intercomm Control	3	3			
C-10414/ARC	Intercomm Control			2		
206-075-483-1	Impedance Matching Network	1	1			
UHF/AM RADIO						
AN/ARC-51BX consisting of:	Radio Set					
C-6287/ARC-51BX	Control	1[1]				
HD-615/ARC-51X	Cooler	1[1]				
ID-1003/ARC	SWR Indicator	1[1]				
MT-2653/ARC	Mount	1[1]				
RT-742( )/ARC	Receiver-Transmitter	1[1]				
AN/ARC-116( ).	Radio Set	1[2][1]	2[1]			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OH-58( )		OH-58A	OH-58C	OH-58D (AHIP)		
FUNCTION/TYPE NUMBER	NOMENCLATURE					
RT-1167/ARC-164(V)	Radio Set	2 1	2 1			
RT-1145C/ARC-164(V)	Receiver-Transmitter			1		
C-9533/ARC-164	Control			1		
MT-4838/ARC-164	Mount (RT-1145)			1		
AS-2487/ARC	UHF Antenna	1	1	1		
HPF40-01T	UHF Hi Pass Filter	1	1			
VHF/AM RADIO						
AN/ARC-115( )	Radio Set	3 1	3 1			
RT-1354/ARC-186(V)	Radio Set	3 1	3 1			
C-10604(V)3/ARC-186(V)	Control			1		
MT-6051/ARC-186(V)	Mount(RT-1300)			1		
RT-1300/ARC-186(V)	Receiver-Transmitter			1		
206-075-518-1	VHF Antenna	4 1	4 1			
BPF40-03P	VHF Band Pass Filter	1	1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OH-58( )		OH-58A	OH-58C	OH-58D (AHIP)		
FUNCTION/TYPE NUMBER	NOMENCLATURE					
VHF/FM RADIO						
AN/ARC-114( )	Radio Set (#1 FM)	1	1			
AN/ARC-114( )	Radio Set (#2 FM)	CPO	CPO			
C-10604(V)3/ARC-186	Control			2		
CM-492/ARC-186(V)	FM Homing Unit			1		
MT-6051/ARC-186(V)	Mount (RT-1300)			2		
RT-1300/ARC-186(V)	Receiver-Transmitter			2		
AS-2485/ARC	FM Comm Antenna	1	1	2		
AS-2486/ARC	#1 FM Homing Antenna (LH)	1	1			
AS-2670/ARC	#1 FM Homing Antenna (RH)	1	1			
206-075-518-1	#1 FM Comm Antenna	[4]1	[4]1			
LPF40-02B	FM Low Pass Filter	1	1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OH-58( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	OH-58A	OH-58C	OH-58D (AHIP)		
IMPROVED VHF/FM						
AM-7189/ARC	RF Amplifier			1		
AS-3595/ARC	Antenna			1		
C-11188/ARC	Control			1		
SECURE VOICE						
MD-1101/A	Audio Threshold Device	1	1			
MT-3802/ARC	Mount	1	1			
C-8157/ARC	Control Indicator	5_1	5_1			
Z-AHP	Remote Control Unit	5_1	5_1			
Z-AHQ	Interface Adapter	5_1	5_1			
TSEC/KY-28	Comm Security Set	5_{CPO}	5_{CPO}			
TSEC/KY-58	Comm Security Set	5_{CPO}	5_{CPO}	CPO		
TSEC/KY-75	Comm Security Set			CPO		
Z-AKM	Mount (KY-75)			1		
GYRO COMPASS						
AN/ASN-43 consisting of:	Gyro Compass Set					
CN-405/ASN	Comparator	1	1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OH-58( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	OH-58A	OH-58C	OH-58D (AHIP)		
CN-998( )/ASN	Directional Gyro	1	1	1		
T-611/ASN	Compass Transmitter	1	1	1		
AHRS						
406-947-310	Attitude Heading Reference System			1		
ADF						
AN/ARN-89( ) consisting of:	Direction Finder Set					
AM-4859( )/ARN-89	Amplifier	1	1			
AS-2108( )/ARN-89	Loop Antenna	1	1			
C-7392( )/ARN-89	Control	1	1			
R-1496( )/ARN-89	Receiver	1	1			
206-032-310-3	ADF Sense Antenna Assy	1	1			
VOR/MB/GS						
AN/ARN-123(V)1 consisting of:	Receiving Set					
C-10048/ARN-123(V)	Control		CPO			
MT-4834/ARN-123(V)	Mount		CPO			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OH-58( )		OH-58A	OH-58C	OH-58D (AHIP)		
FUNCTION/TYPE NUMBER	NOMENCLATURE					
R-2023/ARN-123(V)	Receiver		CPO			
ID-1347C/ARN	Course Indicator		[6]CPO			
AS-1304/ARN	VOR Antenna		[6]CPO			
AS-3188/ARN	GS Antenna		[6]CPO			
AT-640( )/ARN	MB Antenna		[6]CPO			
DOPPLER NAVIGATION						
AN/ASN-137 consisting of:	Doppler Navigation Set					
CV-3669/ASN-137	Signal Data Converter			1		
RT-1193/ASN-128	Receiver-Transmitter-Antenna			1		
RADAR ALTIMETER						
AN/APN-209( )(V)1 consisting of:	Radar Altimeter Set					
AS-2595/APN-194(V)	Antenna		[7]CPO			
RT-1115( )/APN-209(V)	Receiver-Transmitter-Height Indicator		CPO			
AN/APN-209A(V)3 consisting of:	Radar Altimeter Set					
AS-3586/APN-209A(V)	Antenna			2		
RT-1411/APN-209A(V)	Receiver-Transmitter			1		

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OH-58( )		OH-58A	OH-58C	OH-58D (AHIP)		
FUNCTION/TYPE NUMBER	NOMENCLATURE					
IDENTIFICATION						
AN/APX-72 consisting of:	Transponder Set					
C-6280A(P)/APX	Control	1				
MT-3809/APX-72	Mount	1				
RT-859( )/APX-72	Transponder	1				
MT-3513/APX	Mount (TS-1843)	1				
TS-1843( )/APX	Test Set	1				
RT-1285( )/APX-100	Transponder		1			
C-10009/APX-100	Control			1		
MT-4811/APX-100	Mount (RT-1157)			1		
RT-1157/APX-100	Transponder			1		
AT-884( )/APX	Antenna	1	1			
206-077-109-1	Antenna		1			
AT-741( )/A	Antenna			2		
MT-3949A/U	Mount (KIT-1A)	1	1	1		
KIT-1A/TSEC	IFF Computer	CPO	CPO	CPO		

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OH-58( )		OH-58A	OH-58C	OH-58D (AHIP)		
FUNCTION/TYPE NUMBER	NOMENCLATURE					
RADAR WARNING						
AN/APR-39(V)1 consisting of:	Radar Signal Detecting Set					
AS-2890/APR-39(V)	Blade Antenna	[8]CPO	CPO	CPO		
AS-2891/APR-39(V)	Right Spiral Antenna (2 ea)	[8]CPO	CPO	CPO		
AS-2892/APR-39(V)	Left Spiral Antenna (2 ea)	[8]CPO	CPO	CPO		
C-9326/APR-39(V)	Control	[8]CPO	CPO	CPO		
CM-440/APR-39(V)	Comparator	[8]CPO	CPO	CPO		
IP-1150/APR-39(V)	Indicator	[8]CPO	CPO	CPO		
R-1838/APR-39(V)	Receiver (2 ea)	[8]CPO	CPO	CPO		
ATHS						
CP-1516/ASQ	Peripheral Interface Unit			1		
CONTROL/DISPLAY						
406-947-307	Control/Display System			1		
PROXIMITY WARNING						
YG-1054D1 consisting of:	Proximity Warning System					
10027834-101	Antenna	[8]2	[8]2			
HG1001-AD01	Receiver-Transmitter	[8]1	[8]1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OH-58( )		OH-58A	OH-58C	OH-58D (AHIP)		
FUNCTION/TYPE NUMBER	NOMENCLATURE					
POWER SOURCES						
BB-476/A	Battery	9	9			
BB-676/A	Battery	9	9			
PP-6376/A	Static Inverter	1	1			
MISCELLANEOUS						
ID-1351/A	HRB Indicator	1				
ID-1351( )/A	HRB Indicator		1			

2-2. **Avionics and Surveillance Equipment Configurations (Con't).**

NOTES:

1. The AN/ARC-51 was temporarily installed in lieu of the AN/ARC-116 in aircraft 68-16687 thru 68-16986.
2. The AN/ARC-116 and RT-1167 are interchangeable; therefore, either may be installed but not both.
3. The AN/ARC-115 and RT-1354/ARC-186 are interchangeable; therefore, either may be installed but not both.
4. Used as the VHF/AM and #1 FM Comm Antenna.
5. Either provisions for the KY-28 (including C-8157) or the KY-58 (including Z-AHP and Z-AHQ) are installed, not both.
6. Some aircraft may have this equipment installed as part of Complete Provisions Only.
7. Aft antenna installed as part of complete provisions.
8. Equipment installed only in aircraft located at Ft. Bragg, Ft. Campbell, Ft. Hood, and Ft. Rucker.
9. The BB-676 is being replaced by the BB-476 on an attrition basis. The BB-649/A may be installed as a part of a winterization kit.

GENERAL NOTE: The OH-58D (AHIP) was still in development at the time of this printing. Therefore, configuration shown is proposed only, not firm.

APPLICABLE AIRCRAFT AVIONICS MANUALS:

TM 11-1520-228-20 (Pertains to OH-58A)
TM 11-1520-228-20-1 (Pertains to OH-58C)
TM 11-1520-228-20P (Pertains to OH-58A/C)
TM 11-1520-228-34 (Pertains to OH-58A)
TM 11-1520-228-34-1 (Pertains to OH-58C)
TM 11-1520-228-34P (Pertains to OH-58A/C)

2-2. Avionics and Surveillance Equipment Configurations (Con't).

The following configuration depicits a typcially configured T-42A. The actual configuration may vary depending on peculiar geographic requirements or changes incorporated through MWO action and special purpose alterations.		T-42A				
FUNCTION/TYPE NUMBER	NOMENCLATURE					
INTERCOMM						
C-1611( )/AIC	Intercomm Control	4				
UHF/AM RADIO						
AN/ARC-51BX consisting of:	Radio Set					
C-6287/ARC-51BX	Control	1				
HD-615/ARC-51X	Cooler	1				
ID-1003/ARC	SWR Indicator	1				
MT-2653/ARC	Mount	1				
RT-742( )/ARC	Receiver-Transmitter	1				
AT-1108/ARC	VHF/UHF Antenna	[1]1				
VHF/AM RADIO						
AN/ARC-111 consisting of:	Radio Set					
AM-4489/ARC-111	Amplifier-Power Supply	[2]1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

T-42A

FUNCTION/TYPE NUMBER	NOMENCLATURE	T-42A				
MT-3592/ARC-111	Mount (AM-4489)	2_1				
RT-802/ARC-111	Receiver-Transmitter	2_1				
T-366/ARC	Transmitter	2_1				
MT-1142/ARC	Mount (T-366)	2_1				
DY-86/ARN-30	Dynamotor	2_1				
F-726/AR	Filter	2_1				
VHF-20( )	Radio Set	2_1				
G-4582	Control	2_1				
AT-1108/ARC	VHF/UHF Antenna	1_1				
GYRO COMPASS						
C-14 consisting of:	Compass System					
2587193-4	Gyro-Sync Assembly	3_1				
656520	Flux Valve	3_1				
1783867-1	Servo Amplifier	3_1				
AN/ASN-43 consisting of:	Gyro Compass Set					
CN-405/ASN	Compensator	3_1				
CN-998( )/ASN	Directional Gyro	3_1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

T-42A

FUNCTION/TYPE NUMBER	NOMENCLATURE	T-42A
T-611/ASN	Compass Transmitter	3 1
AM-3209/ASN	Servoamplifier	3 1
ADF		
AN/ARN-59 consisting of:	Direction Finder Set	
AT-780/ARN	Loop Antenna	1
C-2275/ARN	Control	1
DY-150/ARN	Dynamotor	1
MT-2018/ARN	Mount (R-836)	1
MT-2019/ARN	Mount (DY-150)	1
R-836/ARN	Receiver	1
VOR/MB/GS		
AN/ARN-30D consisting of:	Receiving Set (VOR)	
C-3436/ARN-30E	Control	4 2
CV-265A/ARN-30A	Converter	4 2
ID-453/ARN-30	Course Indicator	4 2
MT-1174/ARN-30A	Mount (R-102)	4 2
MT-1175/ARN-30A	Mount (CV-265)	4 2

2-2. Avionics and Surveillance Equipment Configurations (Con't).

T-42A

FUNCTION/TYPE NUMBER	NOMENCLATURE	T-42A				
PP-2792/ARN-30D	Power Supply	4_2				
R-1021/ARN-30D	Receiver	4_2				
CV-1275/ARN	Converter	4_2				
MT-2659/ARN	Mount (CV-1275)	4_2				
R-844/ARN-58	Receiving Set (MB/GS)	4_1				
ID-1347C/ARN-82	Course Indicator	4_2				
AN/ARN-123(V)1 consisting of	Receiving Set(VOR/MB/GS)					
C-10048/ARN-123(V)	Control	4_2				
MT-4834/ARN-123(V)	Mount	4_2				
R-2023/ARN-123(V)	Receiver	4_2				
A-138	VOR Antenna	1				
AT-640( )/ARN	MB Antenna	1				
DME						
AN/ARN-124 consisting of:	DME Set					
ID-2192/ARN-124	Control Indicator	5_1				
MT-6034/ARN-124	Mount	5_1				
RT-1294/ARN-124	Receiver-Transmitter	5_1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

T-42A

FUNCTION/TYPE NUMBER	NOMENCLATURE	T-42A
IDENTIFICATION		
AN/APX-72 consisting of:	Transponder Set	
C-6280A(P)/APX	Control	1
MT-3809/APX-72	Mount	1
RT-859( )/APX-72	Transponder	1
AT-884( )/APX	Antenna	1
POWER SOURCES		
BB-432( )/A	Battery	1
PU-542( )/A	Inverter	1
MISCELLANEOUS		
ID-250( )/ARN	Radio Magnetic Indicator	1
ID-998/ASN	Radio Magnetic Indicator	1

NOTES:

1. The AT-1108 is used with both UHF/AM and VHF/AM systems.
2. The VHF-20( ) is a retrofit replacement for the AN/ARC-111 and T-366 systems.
3. The AN/ASN-43 and AM-3209 are retrofit replacements for the C-14 system.
4. The AN/ARN-123 and ID-1347 are retrofit replacements for the AN/ARN-30, CV-1275, and R-844.
5. Retrofit installation.

2-2. Avionics and Surveillance Equipment Configurations (Con't).

GENERAL NOTE: Commercial equivalents of the military nomenclatured equipment may be installed in some aircraft.

APPLICABLE AIRCRAFT AVIONICS MANUALS: DA publications are not available. Refer to applicable commercial literature.

2-2. Avionics and Surveillance Equipment Configurations (Con't).

The following configuration depicts a typically configured OV-1( )/RV-1D. The actual configuration may vary depending on peculiar geographic requirements or changes incorporated through MWO action and special purpose alterations.

FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1B	OV-1C	OV-1D	RV-1D	
INTERCOMM						
C-1611( )/AIC	Intercomm Control	2	2			
C-6533/ARC	Intercomm Control			2	2	
UHF/AM RADIO						
AN/ARC-51BX consisting of:	Radio Set					
C-6287/ARC-51BX	Control	1	1	1_1	1_1	
HD-615/ARC-51X	Cooler	1	1	1_1	1_1	
ID-1003/ARC	SWR Indicator	1	1	1_1	1_1	
MT-2653/ARC	Mount	1	1	1_1	1_1	
RT-742( )/ARC	Receiver-Transmitter	1	1	1_1	1_1	
RT-1167/ARC-164(V)	Radio Set			1_1	1_1	
AT-1108/ARC	VHF/UHF Antenna	2_1	2_1	2_1	2_1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1B	OV-1C	OV-1D	RV-1D	
VHF/AM RADIO						
AN/ARC-134( ) consisting of:	Radio Set					
C-7197/ARC-134	Control	1	1			
MT-3791( )/ARC-134	Mount	1	1			
RT-857/ARC-134	Receiver-Transmitter	1	1			
AN/ARC-115( )	Radio Set			1	1	
AT-1108/ARC	VHF/UHF Antenna	2 1	2 1	2 1	2 1	
VHF/FM RADIO						
AN/ARC-54 consisting of:	Radio Set					
C-3835/ARC-54	Control	3 1	3 1			
MT-1535/ARC-54	Mount	3 1	3 1			
RT-348/ARC-54	Receiver-Transmitter	3 1	3 1			
AN/ARC-131 consisting of:	Radio Set					
C-7088/ARC-131	Control	3 1	3 1			
MT-3664/ARC-131	Mount	3 1	3 1			
RT-823/ARC-131	Receiver-Transmitter	3 1	3 1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1( )/RV-1D OV-1B	OV-1C	OV-1D	RV-1D	
AN/ARC-114( )	Radio Set (#1 FM)			1	1	
AN/ARC-114( )	Radio Set (#2 FM)			CPO		
AS-1703/AR	FM Comm Comm Antenna	1	1			
CU-942( )/ARC	FM Antenna Coupler	1	1			
AS-2042/ARC	FM Homing Antenna	1	1	1	1	
134SCAV247	FM Comm Antenna (#1 FM)			1	1	
134SCAV247	FM Comm Antenna (#2 FM)			CPO		
HF RADIO						
AN/ARC-102 consisting of:	Radio Set					
C-3940/ARC-94	Control	CPO	CPO	CPO	CPO	
PP-3702/ARC-102	Inverter Mounting	CPO	CPO	CPO	CPO	
RT-698/ARC-102	Receiver-Transmitter	CPO	CPO	CPO	CPO	
CU-1658( )/A	HF Antenna Coupler	1	1	1	1	
MT-3772/A	Mount (CU-1658)	1	1	1	1	
1908-01	Lightning Arrester	1	1	1	1	
134AV45511-1	HF Antenna	1	1	1	1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
SECURE VOICE						
MD-736/A	Signal Discriminator (2 ea)	CPO	CPO			
MT-3802/ARC	Mount	1	1	1	1	
C-8157/ARC	Control-Indicator			[4]1	[4]1	
Z-AHP	Remote Control Unit			[4]1	[4]1	
Z-AHQ	Interface Adapter			[4]1	[4]1	
TSEC/KY-28	Comm Security Set			[4]CPO	[4]CPO	
TSEC/KY-58	Comm Security Set			[4]CPO	[4]CPO	
ATTITUDE HEADING						
AN/ASN-76 consisting of:	Attitude Heading Reference Set					
AM-4862/ASN-76	Electronic Control Amplifier	1	1	1	1	
C-8099/ASN-76	Controller	1	1	1	1	
CN-1151/ASN-76	Displacement Gyro	1	1	1	1	
MT-3870/A	Mount	1	1	1	1	
DT-173/AJN consisting of:	Magnetic Azimuth Detector					

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
CN-1072/AJN	Compensator	1	1	1	1	
DT-309/AJN	Detector (Flux Valve)	5 1	5 1	5 1	5 1	
DT-376/ASN	Detector (Flux Valve)	5 1	5 1	5 1	5 1	
INTEGRATED FLIGHT DIRECTOR						
AN/ASN-33 consisting of:	Navigation Computer Set					
AM-2853/ASN	Amplifier	1	1	1	1	
CP-583/ASN	Computer	1	1	1	1	
ID-882/ASN	Attitude-Nav Indicator (Horizontal)	1	1	1	1	
ID-883/ASN	Course Indicator	1	1	1	1	
MT-2416/ASN	Mount (AM-2853, CP-853)	1	1	1	1	
CU-865/ASN	Indicator Coupler	1	1			
MT-2417/ASN	Mount (CU-865)	1	1			
ADF						
AN/ARN-59 consisting of:	Direction Finder Set					
AT-780/ARN	Loop Antenna	1	6 1			
C-2275/ARN	Control	1	6 1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D						
FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1B	OV-1C	OV-1D	RV-1D	
DY-150/ARN	Dynamotor	1	6[1]			
MT-2018/ARN	Mount (R-836)	1	6[1]			
MT-2019/ARN	Mount (DY-150)	1	6[1]			
R-836/ARN	Receiver	1	6[1]			
134AV25518-1	Sense Antenna	1	1	1	1	
AN/ARN-83 consisting of:	Direction Finder Set					
AS-1863/ARN-83	Loop Antenna		6[1]			
C-6899/ARN-83	Control		6[1]			
MT-3605/ARN-83	Mount		6[1]			
R-1391/ARN-83	Receiver		6[1]			
AN/ARN-89( ) consisting of:	Direction Finder Set					
AM-4859( )/ARN-89	Amplifier			1	1	
AS-2108( )/ARN-89	Loop Antenna			1	1	
C-7392( )/ARN-89	Control			1	1	
R-1496( )/ARN-89	Receiver			1	1	
VOR						
AN/ARN-30E consisting of:	Receiving Set (VOR)					

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
C-3436A/ARN-30E	Control	1	6[1]			
CV-265A/ARN-30A	Converter	1	6[1]			
MT-1174/ARN-30A	Mount (R-1021)	1	6[1]			
MT-1175/ARN-30A	Mount (CV-265)	1	6[1]			
PP-2792/ARN-30D	Power Supply	1	6[1]			
R-1021/ARN-30D	Receiver	1	6[1]			
134CS30103-1	VOR Antenna	1	1	1	1	
AN/ARN-82( ) consisting of:	Receiving Set (VOR)					
C-6873B/ARN-82	Control		6[1]	1	1	
MT-3600/ARN-82	Mount		6[1]	1	1	
R-1388( )/ARN-82	Receiver		6[1]	1	1	
MB/GS						
R-844( )/ARN-58	Radio Receiver (MB/GS)	1	1	7[1]	7[1]	
AT-134A/ARN	MB Antenna	9[1]	9[1]	9[1]	9[1]	
134AV25508-1	MB Antenna	9[1]	9[1]	9[1]	9[1]	
134AV35003-1	GS Antenna	1	8[1]			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1B	OV-1C	OV-1D	RV-1D	
AT-326/ARN	GS Antenna		[8]1	1	1	
R-1963/ARN	Radio Receiver (MB/GS)			[7]1	[7]1	
MT-4835/ARN	Mount (R-1963)			[7]1	[7]1	
TACAN						
AN/ARN-103(V)1 consisting of:	Navigation Set (TACAN)					
C-8968/ARN-103(V)	Control	1	1	1	1	
CV-2924(P)/ARN-103(V)	Signal Data Converter	1	1	1	1	
MT-4411/ARN-103(V)	Mounting	1	1	1	1	
RT-1057/ARN-103(V)	Receiver-Transmitter	1	1	1	1	
AT-741( )/A	Antenna	2	2	2	2	
SA-521/A	Antenna Transfer Switch	1	1	1	1	
MT-1995/A	Mount (SA-521)	1	1	1	1	
DOPPLER NAVIGATION						
AN/ASN-64 consisting of:	Doppler Navigation Set					
AN/APN-168( ) consisting of:	Radar Navigation Set					

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
AS-1766( )/APN-168	Antenna	1	1			
CW-854/APN-168	Radome	1	1			
MT-3435/APN-168	Mount (OA-7400)	1	1			
MT-3436/APN-168	Mount (OA-7401)	1	1			
OA-7400/APN-168	Frequency Tracker	1	1			
OA-7401/APN-168	Receiver-Transmitter	1	1			
AN/AYA-3 consisting of:	Doppler Computer Group					
C-6586( )/AYA-3	Control Indicator	1	1			
ID-1282( )/AYA-3	Velocity-Steering Indicator	1	1			
MT-2551/AYA-3	Mount (OA-7432)	1	1			
OA-7432( )/AYA-3	Computer	1	1			
T-992/A	True Airspeed Transmitter	10_1	10_1			
INERTIAL NAVIGATION						
AN/ASN-86 consisting of:	Inertial Navigation Set					
CP-941/ASN-86	Navigation Computer			1	1	
ID-1579/ASN-86	Control-Indicator			1	1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
MT-4447/ASN-86	Mount (MX-8123)			1	1	
MT-4075/ASN-86	Mount (CP-941)			1	1	
MX-8123/ASN-86	Gyro Stabilized Platform			1	1	
T-992/A	True Airspeed Transmitter			10_1	10_1	
RADAR ALTIMETER						
AN/APN-22 consisting of:	Radar Altimeter Set					
AM-291/APN-22	Electronic Control Amplifier	1	11_1			
CY-1409A/APN-22	Receiver-Transmitter Housing	1	11_1			
ID-257/APN-22	Height Indicator	1	11_1			
MT-803/APN-22	Mount	1	11_1			
RT-160/APN-22	Receiver-Transmitter	1	11_1			
AN/APN-171A(V)1 consisting of:	Radar Altimeter Set					
AS-1858/APN-171(V)	Antenna		11_2	2	2	
F-1263/APN-171A(V)	Band Suppression Filer		11_1	1	1	
ID-1345A/APN-171(V)	Height Indicator		11_1	1	1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1B	OV-1C	OV-1D	RV-1D	
MT-4167/APN-171(V)	Mount		11 1	1	1	
RT-804A/APN-171(V)	Receiver-Transmitter		11 1	1	1	
IDENTIFICATION						
AN/APX-72 consisting of:	Transponder Set					
C-6280A(P)/APX	Control	1	1	1	1	
MT-3809/APX-72	Mount	1	1	1	1	
RT-859( )/APX-72	Transponder	1	1	1	1	
TS-1843( )/APX	Test Set	1	1	1	1	
MT-3513/APX	Mount (TS-1843)	1	1	1	1	
KIT-1A/TSEC	IFF Computer	CPO	CPO	CPO	CPO	
MT-3949A/U	Mount (KIT-1A)	1	1	1	1	
AT-741( )/A	Antenna	2	2	2	2	
AUTO PILOT						
AN/ASW-12(V)2 consisting of:	Automatic Flight Control System					
C-3106( )/ASW-12(V)	Auto Pilot Attitude Control	1	1	1	1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1B	OV-1C	OV-1D	RV-1D	
C-3107( )/ASW-12(V)	Auto Pilot Flight Controller	1	1	1	1	
C-3108( )/ASW-12(V)	Attitude Reference Control	1	1	1	1	
CN-601( )/ASW-12(V)	Displacement Gyro	1	1	1	1	
CU-792/ASW-12(V)	Navigational Coupler	1	1	1	1	
MX-2916( )/ASW-12(V)	Accelerometer	1	1	1	1	
MX-2917/ASW-12(V)	Calibration Unit	1	1	1	1	
MX-2918/ASW-12(V)	Calibration Unit	1	1	1	1	
MX-2919/ASW-12(V)	Calibration Unit	1	1	1	1	
TG-78( )/ASW-12(V)	Actuator	2	2	2	2	
TG-80( )/ASW-12(V)	Actuator	1	1	1	1	
TG-81( )/ASW-12(V)	Actuator	1	1	1	1	
PHOTOGRAPHIC						
KS-61A consisting of:	Photographic Surveillance System					
KA-30A consisting of:	Still Picture Camera					
LA-131A	Lens Cone	12 CPO	12,13 CPO			
LA-134A	Camera Body Drive	12 CPO	12,13 CPO			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D						
FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1B	OV-1C	OV-1D	RV-1D	
LA-135	Film Cassette Magazine(2ea)	12 CPO	12,13 CPO			
LA-138A	Lens Cone Case	12 CPO	12,13 CPO			
LA-139A	Camera Equipment Case	12 CPO	12,13 CPO			
LA-136A consisting of:	Lens Cone Group					
LA-130A	Lens Cone	12 CPO	12,13 CPO			
LA-137A	Lens Cone Case	12 CPO	12,13 CPO			
LS-38A consisting of:	Photographic Control Sys					
LA-96A	Attitude Speed Ratio Detector	12 CPO	12 CPO			
LA-152A	Power Supply Control	12 CPO	12,13 CPO			
LA-153A	Camera Mount Control	12 CPO	12,13 CPO			
LA-154A	Camera Exposure Control	12 CPO	12,13 CPO			
LA-155A	Flare Reset Control	12 CPO	12,13 CPO			
LA-156A	Master Camera Control	12 CPO	12,13 CPO			
LA-157A	Photoflash Detector	12 CPO	12,13 CPO			
LA-158A	Cartridge Ejector	12 CPO	12,13 CPO			
LA-159A	Cartridge Ejector	12 CPO	12,13 CPO			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1( )/RV-1D				
		OV-1B	OV-1C	OV-1D	RV-1D	
LA-160A	Camera Mount	12 CPO	12,13 CPO			
LA-161A	Light Monitoring Sensor	12 CPO	12,13 CPO			
LA-162A	Oblique Sight (Left)	12 CPO	12,13 CPO			
LA-163A	Oblique Sight (Right)	12 CPO	12,13 CPO			
LA-176A	Attitude-Speed Ratio Converter	12 CPO	12,13 CPO			
LA-177A	Attitude Speed Ratio Coupler	12 CPO	12,13 CPO			
LA-178A	Flight Line Tracker	12 CPO	12,13 CPO			
KS-104A consisting of:	Photographic Surveillance Sys					
KA-76A consisting of:	Still Picutre Camera					
LA-373A	Camera Body Drive		12,13 CPO			
LA-374A	Camera Lens Cone		12,13 CPO			
LA-375A	Photographic Shutter		12,13 CPO			
LA-407A	Light Sensor (3 ea)		12,13 CPO			
LA-414A	Film Cassette Magazine (2 ea)		12,13 CPO			
LS-59A consisting of:	Photographic Flasher Sys					
LA-359A	Carrying Cradle		12,13 CPO			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1B	OV-1C	OV-1D	RV-1D	
LA-388A	Pod Assembly		12,13 CPO			
LA-389A	Carrying Case		12,13 CPO			
LA-390A	Cable Assembly		12,13 CPO			
LA-391A	Cover Assembly		12,13 CPO			
LA-392A	Turbine Cover Assembly		12,13 CPO			
LA-394A	Control Box Assembly		12,13 CPO			
LS-91A consisting of:	Photographic Control Sys					
LA-96A	Attitude-Speed Ratio Detector		12,13 CPO			
LA-162A	Oblique Sight (Left)		12,13 CPO			
LA-163A	Oblique Sight (Right)		12,13 CPO			
LA-176A	Altitude-Speed Ratio Converter		12,13 CPO			
LA-178A	Flight Line Tracker		12,13 CPO			
LA-405A	Camera Control		12,13 CPO			
LA-406A	Power Supply Control		12,13 CPO			
LA-407A	Light Sensor		12,13 CPO			
LA-408A	Camera Mount		12,13 CPO			
LA-409A	Actuator Assembly		12,13 CPO			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1( )/RV-1D				
		OV-1B	OV-1C	OV-1D	RV-1D	
KS-104B consisting of:	Photographic Surveillance System					
KA-76A consisting of:	Still Picture Camera		12,13 CPO			
LA-373A	Camera Body Drive		12,13 CPO			
LA-374A	Camera Lens Cone		12,13 CPO			
LA-375A	Photographic Shutter		12,13 CPO			
LA-407A	Light Sensor (3 ea)		12,13 CPO			
LA-414A	Film Cassette Magazine (2 ea)		12,13 CPO			
LS-59A consisting of:	Photographic Flasher Sys		12,13 CPO			
LA-359A	Carrying Cradle		12,13 CPO			
LA-388A	Pod Assembly		12,13 CPO			
LA-389A	Carrying Case		12,13 CPO			
LA-390A	Cable Assembly		12,13 CPO			
LA-391A	Cover Assembly		12,13 CPO			
LA-392A	Turbine Cover Assembly		12,13 CPO			
LA-394A	Control Box Assembly		12,13 CPO			
LS-91B consisting of:	Photographic Control Sys					
LA-96A	Altitude-Speed Ratio Detector		12,13 CPO			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
LA-162A	Oblique Sight (Left)		12,13 CPO			
LA-163A	Oblique Sight (Right)		12,13 CPO			
LA-176A	Altitude-Speed Ratio Converter		12,13 CPO			
LA-178A	Flight Line Tracker		12,13 CPO			
LA-405B	Camera Master Control		12,13 CPO			
LA-406A	Power Supply Control		12,13 CPO			
LA-407A	Light Sensor		12,13 CPO			
LA-408B	Camera Mount		12,13 CPO			
LA-409A	Actuator Assembly		12,13 CPO			
KA-60C consisting of:	Still Picture Camera					
LA-410A	Film Magazine		12,14 CPO	15 CPO		
LA-411A	Camera Body Drive		12,14 CPO	15 CPO		
LA-412A	Camera Control		12,14 CPO	15 CPO		
LA-413A	Camera Control Panel		12,14 CPO	15 CPO		
1193D64	Mount (LA-412A)			2		
KS-113A consisting of:	Photographic Surveillance System					

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
KA-76A consisting of:	Still Picture Camera					
LA-373A	Camera Body Drive			CPO		
LA-374A	Lens Cone			CPO		
LA-375A	Photographic Shutter			CPO		
LA-414A	Film Cassette Magazine (2 ea)			CPO		
LA-370A	Lens Cone			CPO		
LA-371A	Lens Cone			CPO		
LA-372A	Lens Cone			CPO		
LA-434A	Code Matrix Block Recorder			CPO		
LS-59A consisting of:	Flasher System					
LA-388A	Pod Assembly			CPO		
LA-390A	Cable Assembly			CPO		
LA-394A	Control Box Assembly			CPO		
LS-92A consisting of:	Photographic Control Sys					
C-8340/A	Altitude-Speed Ratio Control			1		
LA-162A	Oblique Sight (Left)			1		

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
LA-163A	Oblique Sight (Right)			1		
LA-178A	Flight Line Tracker			1		
LA-406A	Power Supply Control			1		
LA-407A	Light Sensor			3		
LA-408B	Camera Mount			1		
LA-409A	Actuator			1		
LA-432A	Camera Master Control			1		
INFRARED SURVEILLANCE						
AN/AAS-14A consisting of:	Infrared Detecting Set					
OA-7825/AAS-14A consisting of:	Control Indicator Group					
C-6822/AAS-14A	Control		1			
CX-11271/AAS-14A	Cable Assembly		1			
CX-11272/AAS-14A	Cable Assembly		1			
CY-4815/AAS-14A	Equipment Cabinet		1			
ID-807/U	Calibration Indicator		1			
IP-808/U	Terrain Display Indicator		2			
SB-2649/AAS-14A	Switch Control Panel		1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
OA-7827/AAS-14A consisting of:	Receiver Group					
CN-770/AAS-14	Displacement Gyro		1			
R-1386/AAS-14A	Receiver		1			
AN/USA-23 consisting of:	Recorder Group					
CY-4811/U	Magazine Case		2			
MA-18/U	Film Magazine		2			
MT-7186/USA-23	Recorder Subassembly		1			
PP-4478/AAS-14A	Power Supply		1			
MT-3582/AAS-14A	Mount (PP-4478)		1			
AM-4464/AAS-14A	Preamplifier		2			
CV-2052/AAS-14A	Signal Data Converter		1			
HD-723/AAS-14A	Cyrogenic Refrigerator		1			
MK-898/AAS-14A	Optical Filter Kit		1			
MT-3610/AAS-14A	Mount (HD-723)		1			
MT-4105/AAS-14A	Mount (CV-2052)		1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
AN/AAS-24 consisting of:	Infrared Detecting Set					
CV-2666/AAS-24	Video Converter			16 CPO		
CY-6665/AAS-24	Film Magazine Case (2 ea)			16 CPO		
HD-841/AAS-24	Rotary Compressor			16 CPO		
MX-8357/AAS-24	Detecting Set Subassembly			16 CPO		
MX-8358/AAS-24	Converter Subassembly			16 CPO		
MX-8359/AAS-24	Recorder Group Blanket			16 CPO		
OA-8511/AAS-24 consisting of:	Recorder Group					
MA-26/AAS-24	Film Magazine (2 ea)			16 CPO		
MX-8356/AAS-24	Recorder Subassembly			16 CPO		
OK-138/AAS-24 consisting of:	Control Indicator Group					
OK-149/AAS-24 consisting of:	Terrain Display/Control Group					
C-8182/AAS-24	Receiver Control			16 CPO		
C-8183/AAS-24	Velocity One Height Control			16 CPO		
C-8180/AAS-24	Indicator Control			16 CPO		
IP-970/AAS-24	Terrain Indicator			16 CPO		

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
OK-150/AAS-24 consisting of:	Calibration Display/Control Group					
IP-969/AAS-24	Calibration Display Indicator			16 CPO		
C-8181/AAS-24	Built In Test Control			16 CPO		
CY-6606/AAS-24	Equipment Cabinet			16 CPO		
MT-4156/AAS-24	Mount			16 CPO		
PP-6270/AAS-24	Power Supply			16 CPO		
R-1615/AAS-24	Infrared Receiver			16 CPO		
MT-4157/AAS-24	Mount (MX-8357, PP-6270)			16 CPO		
MT-4158/AAS-24	Mount (MX-8358)			16 CPO		
MT-4159/AAS-24	Mount (CV-2666)			16 CPO		
134F80332-1	Mount (R-1615)			1		
RADAR SURVEILLANCE						
AN/APS-94C consisting of:	Radar Surveillance Set					
AS-1048/APS-94	Antenna Assembly	1				
C-2996/APS-94	Radar Set Control	1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
C-2997/APS-94	Recorder Control	1				
CM-145( )/APS-94	Signal Comparator	1				
IP-516( )/APS-94	Radar Target Indicator	1				
IP-517( )/APS-94	Video Signal Monitor	1				
J-1098C/APS-94	Interconnection Box	1				
PP-2404( )/APS-94	Power Supply	1				
RD-166( )/UP	Radar Mapping Recorder	1				
RT-530/APS-94	Receiver-Transmitter	1				
SN-257A/APS-94	Synchronizer	1				
AN/APS-94D consisting of:	Radar Surveillance Set					
AS-2199/APS-94D	Antenna			16,17 CPO		
C-7645/APS-94D	Radar Set Control			16,17 CPO		
CM-374/APS-94D	Radar Signal Processor			16,17 CPO		
IP-923/APS-94D	Radar Target Indicator			16,17 CPO		
J-2794/APS-94D	Interconnecting Box			16,17 CPO		
MT-4015/APS-94	Equipment Rack			16,17 CPO		
RO-352/APS-94D	Recorder-Processor-Viewer			16,17 CPO		

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
RT-899/APS-94D	Receiver-Transmitter			16,17 CPO		
SG-794/APS-94D	Sweep Generator			16,17 CPO		
AN/APS-94F consisting of:	Radar Surveillance Set					
AS-3322/APS-94F	Antenna			16,17 CPO		
C-7645/APS-94D	Radar Set Control			16,17 CPO		
CM-481/APS-94F	Signal Processor			16,17 CPO		
HD-1067/APS-94F	Pressurization Set			16,17 CPO		
J-2794A/APS-94D	Interconnecting Box			16,17 CPO		
MT-4015/APS-94D	Equipment Rack			16,17 CPO		
PP-7508/APS-94F	Power Supply Mount			16,17 CPO		
RO-495/U	Recorder-Processor-Viewer			16,17 CPO		
RT-1283/APS-94F	Receiver-Transmitter			16,17 CPO		
SG-1127/APS-94E	Sweep Generator			16,17 CPO		
DATA LINK						
AN/ART-41A	Transmitter		1			
MT-2530/A	Mount		1			
AN/AKT-18 consisting of:	Radar Data Transmitting Set					

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1B	OV-1C	OV-1D	RV-1D	
C-6598/AR	Control	1				
CV-2094/A	Signal Data Converter	1				
KY-565/AKT-18	Video Encoder	1				
MT-2653/ARC	Mount (T-991)	1				
MT-3448/AKT-18	Mount (KY-565)	1				
MT-3617/A	Mount (CV-2094)	1				
SB-2471/AKT-18	Power Distribution Panel	1				
T-991/AR	Transmitter	1				
AN/AKT-18A consisting of:	Radar Data Transmitting Set					
C-6598/AR	Control			18 CPO		
C-9963/AKT-18A	Control			18 CPO		
KY-565A/AKT-18	Video Encoder			18 CPO		
MT-2653/ARC	Mount (T-001)			18 CPO		
MT-3448/AKT-18	Mount (LY-565A)			18 CPO		
MT-4792/AKT-18A	Mount (PD-7255)			18 CPO		
MT-4793/AKT-18A	Mount (J-2794)			18 CPO		

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
PP-7255/AKT-18A	Power Supply-Synchronizer			18 CPO		
T-991/AR	Transmitter			18 CPO		
AN/AKT-18B consisting of:	Radar Data Transmitting Set					
AN/ARC-164(V)12 consisting of:	Radio Set			18 CPO		
C-10547/ARC-164(V)	Control			18 CPO		
MT-6017/ARC-164(V)	Mount			18 CPO		
RT-1288/ARC-164(V)	Receiver-Transmitter			18 CPO		
C-10546/AKT-18B	Control			18 CPO		
KY-865/AKT-18B	Video Encoder			18 CPO		
MT-6016/AKT-18B	Mount			18 CPO		
AT-450/ARC	Data Antenna	1	1	1	19 1	
AN/USQ-61 consisting of:	Digital Data Set					
AN/ART-41A	Transmitter				19 CPO	
MT-2530/A	Mount				19 CPO	
MD-939/USQ-61	Digital Modem				19 CPO	
MT-4902/USQ-61	Mount				19 CPO	
MT-4903/USQ-61	Mount				19 CPO	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
MT-4904/USQ-61	Mount (TSEC/KG)				19 CPO	
PP-7036/USQ-61	Power Supply				19 CPO	
R-2057/USQ-61	Radio Receiver				19 CPO	
SA-2056/USQ-61	Transmit-Receive Switch				19 CPO	
TSEC/KG-35-4	Key Generator				19 CPO	
AN/USQ-61A consisting of:	Digital Data Set					
AN/ARC-164(V)12 consisting of:	Radio Set					
C-10547/ARC-164(V)	Control				19 CPO	
MT-6017/ARC-164(V)	Mount				19 CPO	
RT-1288/ARC-164(V)	Receiver-Transmitter				19 CPO	
MT-4903/USQ-61	Mount (PP-7652)				19 CPO	
MT-4904/USQ-61	Mount (TSEC/KG)				19 CPO	
PP-7652/USQ-61A	Power Supply				19 CPO	
MD-1102/USQ-61	Digital Modem				19 CPO	
TSEC/KG-( )	Key Generator				19 CPO	
AT-256/ARC	Data Antenna				19 1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
DATA ANNOTATION						
AN/AYA-10 consisting of:	Data Annotation System					
C-8338/AYA-10	Control-Monitor			1		
CV-2647/AYA-10	Signal Data Converter			1		
MT-4539/AYA-10	Mount			1		
IP-1080/AYA	Digital Indicator (2 ea)			CPO		
TR-253/AYA	Altitude Transducer			1		
AERIAL RADIAC						
AN/ADR-6(V) consisting of:	Aerial Radiac Set			20 CPO		
C-8163/ADR-6	Control/Alarm Panel			20 CPO		
CP-854/ADR-6	Computer/Power Supply			20 CPO		
DT-322/ADR-6	Detector			20 CPO		
ID-1581/ADR-6	Indicator			20 CPO		
RO-301/ADR-6	Recorder					
RADAR WARNING						
AN/ALR-46(V) consisting of:	Radar Signal Detecting Set			21 CPO	21 CPO	
AM-6639/ALR-46(V)	Amplifier-Detector (4 ea)					

2-2. Avionics and Surveillance Equipment Configurations (Con't).

FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1( )/RV-1D OV-1B	OV-1C	OV-1D	RV-1D	
CM-442/ALR-46(V)	Signal Processor			21 CPO	21 CPO	
ID-1902/ALR-46(V)	Control-Indicator			21 CPO	21 CPO	
IP-957/APR-36(V)	Azimuth Indicator			21 CPO	21 CPO	
R-1854/ALR-46(V)	Receiver			21 CPO	21 CPO	
AST-1503A	Spiral Antenna (4 ea)			21 CPO	21 CPO	
21-036312-01A	Blade Antenna			21 CPO	21 CPO	
AN/APR-39(V)( ) consisting of:	Radar Signal Detecting Set					
AS-2890/APR-39(V)	Blade Antenna			21 CPO	21 CPO	
AS-2891/APR-39(V)	Right Spiral Antenna (2 ea)			21 CPO	21 CPO	
AS-2892/APR-39(V)	Left Spiral Antenna (2 ea)			21 CPO	21 CPO	
C-9326/APR-39(V)	Control			21,22 CPO	21,22 CPO	
C-10412/APR-39(V)	Control			21,22 CPO	21,22 CPO	
CM-440/APR-39(V)	Comparator			21,22 CPO	21,22 CPO	
CM-480/APR-39(V)	Comparator			21,22 CPO	21,22 CPO	
IP-1150/APR-39(V)	Indicator			21 CPO	21 CPO	
R-1838/APR-39(V)	Receiver (2 ea)			21 CPO	21 CPO	
ES-D-221604	Mount (CM-440/480)			21 CPO	21 CPO	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
AN/APR-44(V)3 consisting of:	Radar Signal Detecting Set					
AS-3266/APR-44(V)	Antenna (4 ea)			23 CPO	23 CPO	
C-10387/APR-44(V)	Control			23 CPO	23 CPO	
F-1503/APR-44(V)	Low Pass Filter			23 CPO	23 CPO	
R-2097/APR-44(V)	Receiver			23 CPO	23 CPO	
R-2098/APR-44(V)	Receiver			23 CPO	23 CPO	
PROP SYNCHROPHASER						
AN/AJA-5 consisting of:	Propeller Synchrophaser Set					
SN-324/AJA-5	Synchrophaser	1	1	1	1	
MT-2695/AJA-5	Mount	1	1	1	1	
550512	Speed Bias Assembly	2	2	2	2	
COUNTERMEASURES						
AN/ALQ-147A(V)1 consisting of:	Countermeasures Set					
C-10698/ALQ-147A(V)	Control Unit			CPO		
MD-1074/ALQ-147A(V)	Modulator Assembly			CPO		
T-1407/ALQ-147A(V)	Transmitter Assembly			CPO		

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1B	OV-1C	OV-1D	RV-1D	
AN/ALQ-147A(V)2 consisting of:	Countermeasures Set					
C-10698/ALQ-147A(V)	Control Unit				CPO	
MD-1074/ALQ-147A(V)	Modulator Assembly				CPO	
T-1408/ALQ-147A(V)	Transmitter Assembly				CPO	
AN/ALQ-133 consisting of:	Countermeasures Receiving Set					
OK-270/ALQ-133 consisting of:	Quantizer-Control Group					
AW/UYK-23	Computer (2 ea)				CPO	
BB-507/U	Battery (2 ea)				CPO	
C-9537/ALQ-133	Monitor-Controller				CPO	
C-9538/ALQ-133	Control-Indicator				CPO	
CU-2104/ALQ-133	Power Divider (2 ea)				CPO	
O-1672/ALQ-133	Frequency Synthesizer (2 ea)				CPO	
PP-7035/ALQ-133	Power Supply				CPO	
MS91405-C2D	Mount (C-9537)				1	
MS91405-B1C	Mount (O-1672)				2	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

OV-1( )/RV-1D		OV-1B	OV-1C	OV-1D	RV-1D	
FUNCTION/TYPE NUMBER	NOMENCLATURE					
MS91405-C2D	Mount (PP-7035)				1	
MS91405-B1D2	Mount (AN/UYK-23)				2	
OR-140/ALQ-133 consisting of:	Intercept Receiver Group (2 ea)					
AS-2994/ALQ-133	Spiral Antenna (4 ea)				CPO	
C-9536/ALQ-133	Power Supply Control				CPO	
CM-446/ALQ-133	Phase Comparator				CPO	
CM-447/ALQ-133	Signal Comparator				CPO	
CV-3171/ALQ-133	Converter-Processor				CPO	
CV-3174/ALQ-133	Frequency Converter (2 ea)				CPO	
CV-3395/ALQ-133	Converter-Processor Group				CPO	
CV-3396/ALQ-133	Converter-Processor Group				CPO	
CY-7410/ALQ-133	Intercept Receiver Pod				2	
POWER SOURCES						
OK-279/A consisting of:	Voltage Controller Group					
BB-708/U	Battery			1	1	
C-9606/A	Voltage Controller			1	1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

FUNCTION/TYPE NUMBER	NOMENCLATURE	OV-1( )/RV-1D OV-1B	OV-1C	OV-1D	RV-1D	
ID-1979/A	Control-Indicator			1	1	
MT-4685/A	Mount			1	1	
BB-433( )/A	Battery	1	1	1	1	
PU-544( )/A	Inverter	1	2	1	1	
PU-545( )/A	Inverter	1	1	1	1	
PU-750( )/A	Inverter			1	1	
MISCELLANEOUS						
ID-250( )/ARN	Radio Magnetic Indicator	24 1	24 1			
ID-663( )/U	Bearing-Distance-Heading Indicator	24 1	24 1	1	1	

2-2. **Avionics and Surveillance Equipment Configurations (Con't).**

NOTES:

1. The RT-1167/ARC-164 is a retrofit replacement for the AN/ARC-51 system.
2. The AT-1108 is used with both the VHF/AM and UHF/AM systems.
3. The AN/ARC-54 and AN/ARC-131 are interchangeable; therefore, either may be installed but not both.
4. Either provisions for the KY-28 (including C-8157) or the KY-58 (including Z-AHP and Z-AHQ) are installed but not both.
5. The DT-376/ASN can be substituted for the DT-309/AJN when a special adapter cable is used.
6. The AN/ARN-59 was replaced by the AN/ARN-83 and the AN/ARN-30 was replaced by the AN/ARN-82 beginning with FY 66 aircraft.
7. The R-1963 is a retrofit replacement for the R-844.
8. Either the AT-326 (Collins 37P4) or the 134AV35003-1 is installed, but not both.
9. Either the AT-134A/ARN or the 134AV25508-1 is installed but not both.
10. The T-992 is part of the AN/ASN-64 Doppler Nav System in OV-1B/C aircraft and used with the AN/ASN-86 Inertial Nav System in OV-1D/RV-1D Aircraft.
11. The AN/ARN-22 was replaced by the AN/HPN-171 beginning with FY 68 aircraft.
12. Some components of these systems are installed as a part of Complete Provisions Only.
13. The KS-61A system is installed thru FY 66 aircraft; the KS-104A system is installed in FY 67 aircraft and the KS-104B system is installed in FY 68 aircraft.
14. Provisions for 1 each KA-60C system is installed in FY 66 thru FY-68 aircraft in addition to the KS-61/A or KS-104 ( ) systems.
15. Provisions for 2 each KA-60C systems are installed in addition to the KS-113A systems.
16. Provisions for the AN/AAS-24 and AN/APS-94( ) are superimposed; therefore, either system may be installed but not both.
17. The AN/APS-94F (CPO) is a retrofit replacement for the AN/APS-94D (CPO).
18. The AN/AKT-18B (CPO) is a retrofit replacement for the AN/AKT-18A (CPO).
19. The AN/USQ-61A(CPO) and AT-256 are retrofit replacements for the AN/USQ-61 (CPO) and AT-450.
20. Provisions for the AN/ADR-6 are removed when provisions for the AN/APS-94F and AN/AKT-18B are installed.
21. The AN/APR-39(CPO) is a retrofit replacement for the AN/ALR-46 (CPO).
22. The C-9326 and CM-440, part of the AN/APR-39(V)1 system are interchangeable with the C-10412 and CM-480, part of the AN/APR-39(V)2 system; therefore, either may be installed but not both.
23. Retrofit installation.
24. The ID-250 is installed in lieu of the ID-663 in a few aircraft.

APPLICABLE AIRCRAFT AVIONICS MANUALS:

TM 11-1510-204-20/1 (Pertains to OV-1B)
TM 11-1510-204-20-1/1 (Pertains to OV-1C)
TM 11-1510-204-20-1/2 (Pertains to OV-1C)
TM 11-1510-204-20/2 (Pertains to OV-1B)
TM 11-1510-204-20-2-1 (Pertains to OV-1D)
TM 11-1510-204-20-2-2 (Pertains to OV-1D)

(CONTINUED)

2-2. Avionics and Surveillance Equipment Configurations (Con't).

TM 11-1510-204-20P-1 (Pertains to OV-1C)
TM 11-1510-204-20P-2 (Pertains to OV-1D)
TM 11-1510-204-34-2-1 (Pertains to OV-1D)
TM 11-1510-204-34-2-2 (Pertains to OV-1D)
TM 11-1510-204-34P-1 (Pertains to OV-1C)
TM 11-1510-204-34P-2 (Pertains to OV-1D)
TM 11-1510-204-35-1 (Pertains to OV-1C)
TM 11-1510-204-35/1 (Pertains to OV-1B)
TM 11-1510-204-35/2 (Pertains to OV-1B)
TM 11-1510-213-20-1 (Pertains to RV-1D)
TM 11-1510-213-20-2 (Pertains to RV-1D)
TM 11-1510-213-20P (Pertains to RV-1D)
TM 11-1510-213-34 (Pertains to RV-1D)
TM 11-1510-213-34P (Pertains to RV-1D)

2-2. Avionics and Surveillance Equipment Configurations (Con't).

TH-55( )		TH-55A				
FUNCTION/TYPE NUMBER	NOMENCLATURE					
INTERCOMM						
MX-1646/AIC	Headset Adapter	1				
VHF/AM RADIO						
524A	Radio Set	1				
A-25A	Antenna	1				
POWER SOURCES						
12-GCAB-9E	Battery					

APPLICABLE AIRCRAFT AVIONICS MANUALS: DA Publications are not available. Refer to applicable commercial literature.

2-2. Avionics and Surveillance Equipment Configurations (Con't).

The following configuration depicts a typically configured U-8F. The actual configuration may vary depending on peculiar geographic requirements or changes incorporated through MWO action and special purpose alterations.

FUNCTION/TYPE NUMBER	NOMENCLATURE	U-8F	U-8F (MODERNIZED)			
INTERCOMM						
C-1611( )/AIC	Intercomm Control		2			
SB-329/AR	Signal Distribution Panel	2				
MX-1646/AIC	Headset Adapter	2				
UHF/AM RADIO						
AN/ARC-55( ) consisting of:	Radio Set					
C-8127/ARC-55	Control	1				
MT-1536/ARC-55	Mount	1				
RT-349( )/ARC-55	Receiver-Transmitter	1				
AT-1108/ARC	VHF/UHF Antenna	[1]1	[1]1			
AN/ARC-51BX consisting of:	Radio Set					
C-6287/ARC-51BX	Control		1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-8F						
FUNCTION/TYPE NUMBER	NOMENCLATURE	U-8F	U-8F (MODERNIZED)			
HD-615/ARC-51X	Cooler		1			
ID-1003/ARC	SWR Indicator		1			
MT-2653/ARC	Mount		1			
RT-742( )/ARC	Receiver-Transmitter		1			
VHF/AM RADIO						
AN/ARC-73A consisting of:	Radio Set					
C-4074/ARC-73A	Control	1				
MT-2699/ARC-73	Mount	1				
R-1123/ARC-73	Receiver	1				
T-879/ARC-73	Transmitter	1				
T-366/ARC	Transmitter	1				
C-4209/ARC	Control	1				
MT-1142/ARC	Mount (T-366)	1				
AN/ARC-134( ) consisting of:	Radio Set					
C-7197/ARC-134	Control		1			
MT-3791( )/ARC-134	Mount		1			
RT-857/ARC-134	Receiver-Transmitter		1			
AT-1108/ARC	VHF/UHF Antenna	[1]1	[1]1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-8F		U-8F	U-8F (MODERNIZED)			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
VHF/FM RADIO						
AN/ARC-44 consisting of:	Radio Set					
AT-454/ARC-44	Antenna	1				
DY-107B/AR	Dynamotor	1				
MT-1267A/AR	Mount (DY-107)	1				
MT-1268/AR	Mount (RT-294)	1				
RT-294B/ARC-44	Receiver-Transmitter	1				
SB-327/ARC-44	Control Panel	1				
AN/ARC-54 consisting of:	Radio Set					
C-3835/ARC-54	Control		[2]1			
MT-1535/ARC-54	Mount		[2]1			
RT-348/ARC-54	Receiver-Transmitter		[2]1			
AN/ARC-131 consisting of:	Radio Set					
C-7088/ARC-131	Control		[2]1			
MT-3664/ARC-131	Mount		[2]1			
RT-823/ARC-131	Receiver-Transmitter		[2]1			
AS-1703/AR	FM Comm Antenna		1			
CU-942( )/ARC	FM Antenna Coupler		1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-8F		U-8F	U-8F (MODERNIZED)			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
HF RADIO						
AN/ARC-102 consisting of:	Radio Set					
C-3940/ARC-94	Control	CPO	CPO			
PP-3702/ARC-102	Inverter-Mounting	CPO	CPO			
RT-698/ARC-102	Receiver-Transmitter	CPO	CPO			
CU-991/AR	HF Antenna Coupler	CPO				
MT-1719/AR	Mount (CU-991)	CPO				
CU-1658( )/A	HF Antenna Coupler		CPO			
MT-3772A/A	Mount (CU-1658)		CPO			
SECURE VOICE						
MD-736/A	Signal Discriminator		2*			
C-8157/ARC	Control-Indicator		CPO			
MT-3802/ARC	Mount (KY-28)		CPO			
TSEC/KY-28	Comm Security Set		CPO			
GYRO COMPASS						
AN/ASN-13 consisting of:	Gyro Compass Set					
AM-1514/ASN	Electronic Control Amplifier	1	1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-8F		U-8F	U-8F (MODERNIZED)			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
CN-405/ASN	Compensator	1	1			
ID-567/ASN	Compass Indicator	1	1			
T-611/ASN	Compass Transmitter	1	1			
ADF						
AN/ARN-59 consisting of:	Direction Finder Set					
AT-780/ARN	Loop Antenna	3_1	4_1			
C-2275/ARN	Control	3_1	4_1			
DY-150/ARN	Dynamotor	3_1	4_1			
MT-2018/ARN	Mount (R-836)	3_1	4_1			
MT-2019/ARN	Mount (DY-150)	3_1	4_1			
R-836/ARN	Receiver	3_1	4_1			
VOR						
AN/ARN-30E consisting of:	Receiving Set (VOR)					
AS-580A/ARN	VOR Antenna	3_1	4_1			
C-3436A/ARN-30E	Control	3_1	4_1			
CV-205A/ARN-30A	Converter	3_1	4_1			
ID-453/ARN-30	Course Indicator	3_1	4_1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-8F						
FUNCTION/TYPE NUMBER	NOMENCLATURE	U-8F	U-8F (MODERNIZED)			
MT-1174/ARN-30A	Mount (R-1021)	3[1]	4[1]			
MT-1175/ARN-30A	Mount (CV-265)	3[1]	4[1]			
PP-2792/ARN-30D	Power Supply	3[1]	4[1]			
R-1021/ARN-30D	Receiver	3[1]	4[1]			
CV-1275/ARN	Converter	3[1]	4[1]			
MT-2659/ARN	Mount (CV-1275)	3[1]	4[1]			
MB						
AN/ARN-12 consisting of:	Receiving Set (MB)					
MT-589A/ARN-12	Mount	5[1]	5[1]			
R-122A/ARN-12	Receiver	5[1]	5[1]			
AN/ARN-32 consisting of:	Receiving Set (MB)					
MT-1546/ARN-32	Mount	5[1]	5[1]			
R-666B/ARN-32	Receiver	5[1]	5[1]			
AT-640( )/ARN	MB Antenna	1	1			
GS						
AN/ARA-54 consisting of:	Receiving Set (GS)					
C-2065/AR	Control	1	1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-8F		U-8F	U-8F (MODERNIZED)			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
MT-1762/AR	Mount	1	1			
R-746/AR	Receiver	1	1			
TACAN						
AN/ARN-52 consisting of:	Navigation Set					
C-2010/ARN-52(V)	Control		4 1			
MT-3680/ARN-52(V)	Mounting		4 1			
RT-384/ARN-52(V)	Receiver-Transmitter		4 1			
AT-741( )/A	Antenna		4 1			
WEATHER RADAR						
AN/APN-158( ) consisting of:	Weather Radar Set					
AS-1520( )/APN-158	Antenna	1	1			
C-4881/APN-150	Control	1	1			
IP-724( )/APN-158	Azimuth Range Indicator	1	1			
MT-3068/APN-158	Mount (RT-711)	1	1			
MT-3069/APN-158	Mount (SN-358)	1	1			
RT-711( )/APN-158	Receiver-Transmitter	1	1			
SN-358( )/APN-158	Synchronizer	1	1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-8F						
FUNCTION/TYPE NUMBER	NOMENCLATURE	U-8F	U-8F (MODERNIZED)			
IDENTIFICATION						
AN/APX-72 consisting of:	Transponder Set					
C-6280A(P)/APX	Control	1	1			
MT-3809/APX-72	Mount	1	1			
RT-859( )/APX-72	Transponder	1	1			
MT-3513/APX	Mount (TS-1843)	1	1			
TS-1843( )/APX	Test Set	1	1			
MT-3949A/U	Mount (KIT-1A)	1	1			
KIT-1A/TSEC	IFF Computer	CPO	CPO			
AT-884( )/APX	Antenna	1	1			
POWER SOURCES						
BB-432( )/A	Battery	1	1			
PU-543( )/A	Inverter	1				
PU-544( )/A	Inverter	1	2			
MISCELLANEOUS						
AM-3209/ASN	Servoamplifier		1			
ID-250( )/ARN	Radio Magnetic Indicator		[6]1			
ID-387/ARN	Course Indicator		[6]CPO			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-8F		U-8F	U-8F (MODERNIZED)			
FUNCTION/TYPE NUMBER	NOMENCLATURE					
ID-663( )/U	Bearing-Distance-Heading-Indicator		6 CPO			
ID-998/ASN	Radio Magnetic Indicator		1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

NOTES:

1. The AT-1108 is used with both UHF/AM and VHF/AM systems.
2. The AN/ARC-54 and AN/ARC-131 are interchangeable; therefore, either may be installed but not both.
3. Either 2 each ADF and 1 each VOR or 1 each ADF and 2 each VOR systems may be installed.
4. Either 1 each ADF, 1 each NOR and 1 each TACAN or 2 each ADF and 1 each VOR or 1 each ADF and 2 each VOR systems may be installed.
5. Either the AN/ARN-12 or the AN/ARN-32 system is installed, not both.
6. The ID-387 and ID-663 are installed in lieu of the ID-250 with the ADF/VOR/TACAN configuration.

GENERAL NOTE: The modernized configuration pertains to those aircraft which have had avionics standardization (ZYR/ZYU) MWO's applied.

APPLICABLE AIRCRAFT AVIONICS MANUALS:

TM 11-1510-201-20
TM 11-1510-201-20P
TM 11-1510-201-20P-2
TM 11-1510-201-34P-2
TM 11-1510-201-35
TM 11-1510-201-35P

2-2. Avionics and Surveillance Equipment Configurations (Con't).

The following configuration depicts a typically configured U-21( )/RU-21( ). The actual configuration may vary depending on peculiar geographic requirements or changes incorporated through MWO action and special purpose alterations.		U-21A/G	RU-21A	RU-21B	RU-21C	RU-21H
FUNCTION/TYPE NUMBER	NOMENCLATURE					
INTERCOMM						
C-1611( )/AIC	Intercomm Control	3	2	2	2	2
UHF-AM RADIO						
AN/ARC-51BX consisting of:	Radio Set					
C-6287/ARC-51BX	Control	1	1	1	1	
HD-615/ARC-51X	Cooler	1	1	1	1	
ID-1003/ARC	SWR Indicator	1	1	1	1	
MT-2653/ARC	Mount	1	1	1	1	
RT-742( )/ARC	Receiver-Transmitter	1	1	1	1	
AT-1108/ARC	VHF/UHF Antenna	1 1	1 1	1 1	1 1	1 1
RT-1167/ARC-164	Radio Set					1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-21( )/RU-21( )		U-21A/G	RU-21A	RU-21B	RU-21C	RU-21H
FUNCTION/TYPE NUMBER	NOMENCLATURE					
VHF/AM RADIO						
AN/ARC-134( ) consisting of:	Radio Set					
C-7197/ARC-134	Control	1	1	1	1	1
MT-3791( )/ARC-134	Mount	1	1	1	1	1
RT-857/ARC-134	Receiver-Transmitter	1	1	1	1	1
AT-1108/ARC	VHF/UHF Antenna	1[1]	1[1]	1[1]	1[1]	1[1]
VHF/FM RADIO						
AN/ARC-54 consisting of:	Radio Set					
C-3835/ARC-54	Control	2[1]	2[1]	2[1]	2[1]	2[1]
MT-1535/ARC-54	Mount	2[1]	2[1]	2[1]	2[1]	2[1]
RT-348/ARC-54	Receiver-Transmitter	2[1]	2[1]	2[1]	2[1]	2[1]
AN/ARC-131 consisting of:						
C-7088/ARC-131	Control	2[1]	2[1]	2[1]	2[1]	2[1]
MT-3664/ARC-131	Mount	2[1]	2[1]	2[1]	2[1]	2[1]
RT-823/ARC-131	Receiver-Transmitter	2[1]	2[1]	2[1]	2[1]	2[1]
AS-1703/AR	FM Comm Antenna	1				
CU-942( )/ARC	FM Antenna Coupler	1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-21( )/RU-21( )		U-21A/G	RU-21A	RU-21B	RU-21C	RU-21H
FUNCTION/TYPE NUMBER	NOMENCLATURE					
AS-1922/ARC	FM Homing Antenna	1	1	1	1	1
AS-2285/ARC	FM Comm Antenna		1	1	1	1
HF RADIO						
AN/ARC-102 consisting of:	Radio Set					
C-3940/ARC-94	Control	1	1	1	CPO	1
RT-698/ARC-102	Receiver-Transmitter	1	1	1	CPO	1
50-345772	Mount	3/1	3/1	3/1	3/CPO	3/1
CU-1658( )/A	Antenna Coupler	1	1	1	CPO	1
MT-3772A/A	Mount (CU-1658)	1	1	1	CPO	1
50-345615-601	HF Antenna		1	1	CPO	
50-346063-3	HF Antenna	4/1				
91-340045-1	HF Antenna	5/1				1
SECURE VOICE						
MD-736/A	Signal Discriminator	3	2	2	2	3
C-8157/ARC	Control-Indicator	1	1	1	1	3
MT-3802/ARC	Mount (KY-28)	1	1	1	1	3
TSEC/KY-28	Comm Security Set	CPO	CPO	CPO	CPO	CPO

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-21( )/RU-21( )		U-21A/G	RU-21A	RU-21B	RU-21C	RU-21H
FUNCTION/TYPE NUMBER	NOMENCLATURE					
GYRO COMPASS						
AN/ASN-43 consisting of:						
CN-405/ASN	Compensator	1	1	[8]1	[8]1	1
CN-998( )/ASN	Directional Gyro	1	1	[8]1	[8]1	1
T-611/ASN	Compass Transmitter	1	1	[8]1	[8]1	1
ADF						
AN/ARN-83 consisting of:	Direction Finder Set					
AS-1863/ARN-83	Loop Antenna	1	1	1	1	1
C-6899/ARN-83	Control	1	1	1	1	1
MT-3605/ARN-83	Mount	1	1	1	1	1
R-1391/ARN-83	Receiver	1	1	1	1	1
50-345611	ADF Sense Antenna	[4]1				
50-345812	ADF Sense Antenna	[5]1	1	1	1	1
VOR						
AN/ARN-82( ) consisting of:	Receiving Set (VOR)					
C-6873B/ARN-82	Control	1				
ID-1347C/ARN-82	Course Indicator	1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-21( )/RU-21( )		U-21A/G	RU-21A	RU-21B	RU-21C	RU-21H
FUNCTION/TYPE NUMBER	NOMENCLATURE					
MT-3600/ARN-82	Mount	1				
R-1388( )/ARN-82	Receiver	1				
AS-580A/ARN	VOR/GS Antenna	6[1]				6[1]
VT-10-02	VOR/GS Antenna		6[2]	6[2]	6[2]	
MB/GS						
R-1963/ARN	Radio Receiver (MB/GS)	1	1	1	1	1
MT-4835/ARN	Mount (R-1963)	1	1	1	1	1
AT-640( )/ARN	MB Antenna	1	1	1	1	1
AS-580A/ARN	VOR/GS Antenna	6[1]				6[1]
VT-10-02	VOR/GS Antenna		6[2]	6[2]	6[2]	
TACAN						
AN/ARN-103(V) consisting of:	Navigation Set (TACAN)					
C-8968/ARN-103(V)	Control	1				1
CV-2924(P)/ARN-103(V)	Signal Data Converter	1				1
MT-4411/ARN-103(V)	Mounting	1				1
RT-1057/ARN-103(V)	Receiver-Transmitter	1				1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-21( )/RU-21( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	U-21A/G	RU-21A	RU-21B	RU-21C	RU-21H
AT-884( )/APX	Antenna	1	2	2	2	1
339D-1	Distance Indicator	1	1	1	1	1
AN/ARN-102 consisting of:	Navigation Set (TACAN)					
0046-101-5109	Receiver-Transmitter		1	1	1	
0046-101-5110	Control		1	1	1	
8010000152	Mount		1	1	1	
INERTIAL NAVIGATION						
AN/ASN-86 consisting of:	Inertial Navigation Set					
CP-941/ASN-86	Navigation Computer		1	1	1	1
ID-1579/ASN-86	Control-Indicator		1	1	1	1
MT-4447/ASN-86	Mount (MX-8123)		1	1	1	1
MT-4075/ASN-86	Mount (CP-941)		1	1	1	1
MX-8123/ASN-86	Gyro Stabilized Platform		1	1	1	1
T-611/ASN	Compass Transmitter		1	1	1	1
CN-405/ASN	Compensator		1	1	1	1
T-992/A	True Airspeed Transmitter					1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-21( )/RU-21( )		U-21A/G	RU-21A	RU-21B	RU-21C	RU-21H
FUNCTION/TYPE NUMBER	NOMENCLATURE					
WEATHER RADAR						
AN/APN-158( ) consisting of:	Weather Radar Set					
AS-1520( )/APN-158	Antenna	7[1]	7[1]	7[1]	7[1]	7[1]
C-4881/APN-158	Control	7[1]	7[1]	7[1]	7[1]	7[1]
IP-724( )/APN-158	Azimuth Range & Indicator	7[1]	7[1]	7[1]	7[1]	7[1]
MT-3068/APN-158	Mount (RT-711)	7[1]	7[1]	7[1]	7[1]	7[1]
MT-3069/APN-158	Mount (SN-358)	7[1]	7[1]	7[1]	7[1]	7[1]
RT-711( )/APN-158	Receiver-Transmitter	7[1]	7[1]	7[1]	7[1]	7[1]
SN-358( )/APN-158	Synchronizer	7[1]	7[1]	7[1]	7[1]	7[1]
AN/APN-215(V)1 consisting of:	Weather Radar Set		•			
AS-3451/APN-215(V)	Antenna	7[1]	7[1]	7[1]	7[1]	7[1]
ID-1376/APN-215(V)	Indicator	7[1]	7[1]	7[1]	7[1]	7[1]
MT-5203/APS-505	Mount	7[1]	7[1]	7[1]	7[1]	7[1]
RT-1352/APN-215(V)	Receiver-Transmitter	7[1]	7[1]	7[1]	7[1]	7[1]
IDENTIFICATION						
AN/APX-72 consisting of:	Transponder Set					

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-21( )/RU-21( )		U-21A/G	RU-21A	RU-21B	RU-21C	RU-21H
FUNCTION/TYPE NUMBER	NOMENCLATURE					
C-6280A(P)/APX	Control	1	1	1	1	1
MT-3809/APX-72	Mount	1	1	1	1	1
RT-859( )/APX-72	Transponder	1	1	1	1	1
TS-1843( )/APX	Test Set	1	1	1	1	1
MT-3513/APX	Mount (TS-1843)	1	1	1	1	1
AT-884( )/APX	Antenna	1	1	1	1	1
MT-3949A/U	Mount (KIT-1A)	1	1	1	1	1
KIT-1A/TSEC	IFF Computer	CPO	CPO	CPO	CPO	CPO
AUTOPILOT						
H-14	Automatic Flight Control System		1	1	1	
ATTITUDE INDICATING						
MD-1	Displacement Gyro	2	8 1	8 1	8 1	1
MC-1	Rate Gyro	2	8 1	8 1	8 1	1
RADAR WARNING						
AN/APR-39(V)1 consisting of:	Radar Signal Detecting Set					

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-21( )/RU-21( )		U-21A/G	RU-21A	RU-21B	RU-21C	RU-21H
FUNCTION/TYPE NUMBER	NOMENCLATURE					
AS-2890/APR-39(V)	Blade Antenna		8 CPO	8 CPO	8 CPO	8 CPO
AS-2891/APR-39(V)	Right Spiral Antenna (2 ea)		8 CPO	8 CPO	8 CPO	8 CPO
AS-2892/APR-39(V)	Left Spiral Antenna (2 ea)		8 CPO	8 CPO	8 CPO	8 CPO
C-9326/APR-39(V)	Control		8 CPO	8 CPO	8 CPO	8 CPO
CM-440/APR-39(V)	Comparator		8 CPO	8 CPO	8 CPO	8 CPO
IP-1150/APR-39(V)	Indicator		8 CPO	8 CPO	8 CPO	8 CPO
R-1838/APR-39(V)	Receiver (2 ea)		8 CPO	8 CPO	8 CPO	8 CPO
AN/APR-44(V)3 consisting of:	Radar Signal Detecting Set					
AS-3266/APR-44(V)	Antenna (4 ea)		8 CPO	8 CPO	8 CPO	8 CPO
C-10387/APR-44(V)	Control		8 CPO	8 CPO	8 CPO	8 CPO
F-1503/APR-44(V)	Low Pass Filter		8 CPO	8 CPO	8 CPO	8 CPO
R-2097/APR-44(V)	Receiver		8 CPO	8 CPO	8 CPO	8 CPO
R-2098/APR-44(V)	Receiver		8 CPO	8 CPO	8 CPO	8 CPO
POWER SOURCES						
BB-433( )/A	Battery	1	1			1
E551-11220-6	Battery			1	1	
50-345764-1	Main Inverter	4,9 1	9 1	9 1	9 1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

U-21( )/RU-21( )		U-21A/G	RU-21A	RU-21B	RU-21C	RU-21H
FUNCTION/TYPE NUMBER	NOMENCLATURE					
50-345764-2	Standby Inverter	4,9[1]	9[1]	9[1]	9[1]	
50-345764-5	Main Inverter	5,9[1]				9[1]
50-345764-6	Standby Inverter	5,9[1]				9[1]
PU-544( )/A	INS Inverter					1
MGH 229-100	INS Inverter		1	1	1	
MISCELLANEOUS						
AM-3209/ASN	Servoamplifier	1	1	1	1	1
ID-250( )/ARN	Radio Magnetic Indicator	1				2
ID-351B/ARN	Course Indicator	10[1]	10[1]	10[1]	10[1]	10[1]
ID-387/ARN	Course Indicator	10[1]	10[1]	10[1]	10[1]	10[1]
ID-998/ASN	Radio Magnetic Indicator	1	1			1
50-345974	Radio Magnetic Indicator			11[1]	11[1]	
AN/ARA-50 consisting of:	UHF Direction Finder Set					
AM-3624/ARA-50	Amplifier		CPO	CPO	CPO	
AS-909/ARA-48	Loop Antenna		CPO	CPO	CPO	
MT-1955/ARA-50	Mount (AM-3624)		CPO	CPO	CPO	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

NOTES:

1. The AT-1108 is used with both the VHF/AM and UHF/AM systems.
2. The AN/ARC-54 and AN/ARC-131 are interchangeable; therefore, either may be installed but not both.
3. Made from PP-3702/ARC-102.
4. Installed in U-21A only.
5. Installed in U-21G only.
6. Used with both the VOR and Glide Scope systems.
7. The AN/APN-215 system is a retrofit replacement for the AN/APN-158 system.
8. Retrofit installation.
9. Made from PU-545/A.
10. The ID-351B and ID-387 are interchangeable; therefore, either may be installed but not both.
11. Made from ID-998/ASN.

GENERAL NOTES:
1. The above configurations do not include mission equipment installed in RU-21 Series aircraft.
2. The U-21F aircraft is not listed in the above configurations because it contains all commercial avionics equipment. Data sheets or supply information for these items will not appear in this publication. Support of these items is the responsibility of the user.
3. Some U-21A/G aircraft have had a non-standard commercial avionics package installed by King Radio Corporation. Data sheets or supply information for these items will not appear in this publication. Support of these items is the responsibility of the user.

APPLICABLE AIRCRAFT AVIONICS MANUALS:

TM 11-1510-209-20 (Pertains to U-21A/G)
TM 11-1510-209-20-1 (Pertains to RU-21B/C)
TM 11-1510-209-20-4 (Pertains to RU-21A)
TM 11-1510-209-20-5 (Pertains to RU-21H)
TM 11-1510-209-20P (Pertains to U-21A/G)
TM 11-1510-209-20P-1 (Pertains to RU-21B/C)
TM 11-1510-209-20P-4 (Pertains to RU-21A)
TM 11-1510-209-24P-5 (Pertains to RU-21H)
TM 11-1510-209-34P (Pertains to U-21A/G)
TM 11-1510-209-34P-1 (Pertains to RU-21B/C)
TM 11-1510-209-34P-4 (Pertains to RU-21A)
TM 11-1510-209-35 (Pertains to U-21A/G)
TM 11-1510-209-35-1 (Pertains to RU-21B/C)
TM 11-1510-209-35-4 (Pertains to RU-21A)
TM 11-1510-209-35-5 (Pertains to RU-21H)

2-2. Avionics and Surveillance Equipment Configurations (Con't).

The following configuration depicts a typically configured UH-1( )/EH-1( ). The actual configuration may vary depending on peculiar geographic requirements or changes incorporated through MWO action and special purpose alterations.		UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
INTERCOMM						
C-1611( )/AIC	Intercomm Control	4	3_4		2	2
C-6533/ARC	Intercomm Control		3_4			
UHF/AM RADIO						
AN/ARC-51BX consisting of:	Radio Set					
C-6287/ARC-51BX	Control	4_1	4_1		1	
HD-615/ARC-51X	Cooler	4_1	4_1		1	
ID-1003/ARC	SWR Indicator	4_1	4_1		1	
MT-2653/ARC	Mount	4_1	4_1		1	
RT-742( )/ARC	Receiver-Transmitter	4_1	4_1		1	
AT-1108/ARC	VHF/UHF Antenna	5_1	5_1		5_1	5_1
RT-1167/ARC-164(V)	Radio Set					1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( )		UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
VHF/AM RADIO						
AN/ARC-73A consisting of:	Radio Set					
C-4074/ARC-73A	Control	4,6[1]	4,6[1]			
MT-2699/ARC-73	Mount	4,6[1]	4,6[1]			
R-1123/ARC-73	Receiver	4,6[1]	4,6[1]			
T-879/ARC-73	Transmitter	4,6[1]	4,6[1]			
T-366/ARC	Transmitter	6[1]	6[1]			
C-4209/ARC	Control	6[1]	6[1]			
MT-1142/ARC	Mount (T-366)	6[1]	6[1]			
DY-86/ARN-30	Dynamotor	6[1]	6[1]			
AN/ARC-134( ) consisting of:	Radio Set					
C-7197/ARC-134	Control	6[1]	6[1]		1	
MT-3791( )/ARC-134	Mount	6[1]	6[1]		1	
RT-857/ARC-134	Receiver-Transmitter	6[1]	6[1]		1	
AN/ARC-115( )	Radio Set	6,7[1]	6,7[1]			7[1]
RT-1354/ARC-186	Radio Set	6,7[1]	6,7[1]			7[1]
AT-1108/ARC	VHF/UHF Antenna	5[1]	5[1]		5[1]	5[1]

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( )		UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
VHF/FM RADIO						
AN/ARC-54 consisting of:	Radio Set (#1 FM)					
C-3835/ARC-54	Control	8 1	8 1			
MT-1535/ARC-54	Mount	8 1	8 1			
RT-348/ARC-54	Receiver-Transmitter	8 1	8 1			
AN/ARC-131 consisting of:	Radio Set (#1 FM)					
C-7088/ARC-131	Control	8 1	8 1		1	
MT-3664/ARC-131	Mount	8 1	8 1		1	
RT-823/ARC-131	Receiver-Transmitter	8 1	8 1		1	
AN/ARC-114( )	Radio Set (#2 FM)	9 CPO	9 CPO			1
AS-1703/AR	FM Comm Antenna	10 1	10 1			
CU-942( )/ARC	FM Antenna Coupler	10 1	10 1			
FM 10-30-1	FM Comm Antenna	10 1	10 1			1
AS-3352/ARC	FM Comm Antenna				1	
CU-2239/ARC	FM Antenna Coupler				1	
AS-1922/ARC	FM Homing Antenna	1	1			
AS-3350/ARC	FM Homing Antenna (RH)				1	1
AS-3351/ARC	FM Homing Antenna (LH)				1	1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
HF RADIO						
AN/ARC-102 consisting of:	Radio Set					
C-3940/ARC-94	Control	CPO	CPO			
PP-3702/ARC-102	Inverter-Mounting	CPO	CPO			
RT-698/ARC-102	Receiver-Transmitter	CPO	CPO			
CU-991/AR	HF Antenna Coupler	CPO	[11] CPO			
CU-1658( )/A	HF Antenna Coupler		[11] CPO			
MT-1719/AR	Mount (CU-991)	CPO	[11] CPO			
MT-3772/A	Mount (CU-1658)		[11] CPO			
205-706-027-1	HF Antenna	CPO	CPO			
SECURE VOICE						
MD-736/A	Signal Discriminator	4	[3] 4		5	4
MD-1047/A	Audio Threshold Device		[3] 1			
MT-3802/ARC	Mount	1	1		1	1
C-8157/ARC	Control-Indicator	[12] 1	[12] 1		[12] 1	[12] 1
Z-AHP	Remote Control Unit	[12] 1	[12] 1		[12] 1	[12] 1
Z-AHQ	Interface Adapter	[12] 1	[12] 1		[12] 1	[12] 1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( )		UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
TSEC/KY-28	Comm Security Set	12_{CPO}	12_{CPO}		12_{CPO}	12_{CPO}
TSEC/KY-58	Comm Security Set	12_{CPO}	12_{CPO}		12_{CPO}	12_{CPO}
GYRO COMPASS						
J-2 consisting of:	Gyro Compass Set					
A-2	Amplifier	13_1	13_1			
CN-405/ASN	Compensator	13_1	13_1			
S-3( )	Gyro Control	13_1	13_1			
T-611/ASN	Compass Transmitter	13_1	13_1			
AN/ASN-43 consisting of:	Gyro Compass Set					
CN-405/ASN	Compensator	13_1	13_1		1	1
CN-998( )/ASN	Directional Gyro	13_1	13_1		1	1
T-611/ASN	Compass Transmitter	13_1	13_1		1	1
ADF						
AN/ARN-59 consisting of:	Direction Finder Set					
AT-780/ARN	Loop Antenna	14_1	14_1			
C-2275/ARN	Control	14_1	14_1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( )		UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
DY-150/ARN	Dynamotor	14[1]	14[1]			
MT-2018/ARN	Mount (R-836)	14[1]	14[1]			
MT-2019/ARN	Mount (DY-150)	14[1]	14[1]			
R-836/ARN	Receiver	14[1]	14[1]			
AN/ARN-83 consisting of:	Direction-Finder Set					
AS-1863/ARN-83	Loop Antenna	14[1]	14[1]		1	1
C-6899/ARN-83	Control	14[1]	14[1]		1	1
MT-3605/ARN-83	Mount	14[1]	14[1]		1	1
R-1391/ARN-83	Receiver	14[1]	14[1]		1	1
205-075-325-1	ADF Sense Antenna		1		1	1
204-075-328-1	ADF Sense Antenna	1				
VOR/MB/GS						
AN/ARN-30E consisting of:	Receiving Set (VOR)					
C-3436A/ARN-30E	Control	15[1]	15[1]			
CV-265A/ARN-30A	Converter	15[1]	15[1]			
ID-453/ARN-30	Course Indicator	15[1]	15[1]			
MT-1174/ARN-30A	Mount (R-1021)	15[1]	15[1]			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( )		UH-1B/C/M/	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
MT-1175/ARN-30A	Mount (CV-265)	15[1]	15[1]			
PP-2792/ARN-30D	Power Supply	15[1]	15[1]			
R-1021/ARN-30D	Receiver	15[1]	15[1]			
CV-1275/ARN	Converter	15[1]	15[1]			
MT-2659/ARN	Mount (CV-1275)	15[1]	15[1]			
AN/ARN-82( ) consisting of:	Receiving Set (VOR)					
C-6873B/ARN-82	Control	15[1]	15[1]		1	
ID-1347C/ARN-82	Course Indicator	15[1]	15[1]		1	1
MT-3600/ARN-82	Mount	15[1]	15[1]		1	
R-1388( )/ARN-82	Receiver	15[1]	15[1]		1	
AS-1304/ARN	VOR Antenna	1	1		1	1
R-1041( )/ARN	Radio Receiver (MB)	CPO	CPO		CPO	
MT-2292/ARN	Mount (R-1041)	CPO	CPO		CPO	
AT-640( )/ARN	MB Antenna	1	1		1	1
R-1963/ARN	Radio Receiver (MB/GS)			16[1]		
MT-4835/ARN	Mount (R-1963)			16[1]		
AN/ARN-123(V)3 consisting of:	Receiving Set (VOR/MB/GS)					

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
C-10048/ARN-123(V)	Control					1
MT-4980/ARN-123(V)	Mount					1
R-2023/ARN-123(V)	Receiver					1
AS-3188/ARN	GS Antenna			16[1]		1
DME						
AN/ARN-124 consisting of:	DME Set					
ID-2192/ARN-124	Control Indicator			16[1]		
MT-6034/ARN-124	Mount			16[1]		
RT-1294/ARN-124	Receiver-Transmitter			16[1]		
AT-741( )/A	Antenna			16[1]		
TACAN						
AN/ARN-103(V)1 consisting of:	TACAN Set					
C-8968 ARN-103(V)	Control					1
CV-2924(P)/ARN-103(V)	Signal Data Converter					1
MT-4411/ARN-103(V)	Mount					1
RT-1057/ARN-103(V)	Receiver-Transmitter					1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( )		UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
AT-741( )/A	Antenna					2
SA-521/A	Switch Assembly					1
MT-1995/A	Mount (SA-521)					1
INERTIAL NAVIGATION						
AN/ASN-86 consisting of:	Inertial Navigation Set					
CP-941/ASN-86	Navigation Computer					1
ID-1579/ASN-86	Control-Indicator					1
MT-4447/ASN-86	Mount (MX-8123)					1
MT-4075/ASN-86	Mount (CP-941)					1
MX-8123/ASN-86	Gyro Stabilized Platform					1
CN-405/ASN	Compensator					1
T-611/ASN	Compass Transmitter					1
RADAR ALTIMETER						
AN/APN-209( )(V)( ) consisting of:	Radar Altimeter Set					
AS-2595/APN-194(V)	Antenna			15[2]		2
ID-1917/APN-209(V)	Height Indicator			15[1]		
RT-1115( )/APN-209(V)	Receiver-Transmitter-Height Indicator			15[1]		1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( )		UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
IDENTIFICATION						
AN/APX-72 consisting of:	Transponder Set					
C-6280A(P)/APX	Control	1	1		1	1
MT-3809/APX-72	Mount	1	1		1	1
MT-859( )/APX-72	Transponder	1	1		1	1
MT-3513/APX	Mount (TS-1843)	1	1		1	1
TS-1843( )/APX	Test Set	1	1		1	1
AT-884( )/APX	Antenna	1	1		1	1
MT-3949A/U	Mount (KIT-1A)	1	1		1	1
KIT-1A/TSEC	IFF Computer	CPO	CPO		CPO	CPO
ATTITUDE INDICATING						
MD-1	Displacement Gyro	1	1		1	1
MC-1	Rate Gyro	[17]1	[17]1		[17]1	
RADAR WARNING						
AN/APR-39(V)1 consisting of:	Radar Signal Detecting Set					
AS-2890/APR-39(V)	Blade Antenna		[16]CPO		CPO	CPO
AS-2891/APR-39(V)	Right Spiral Antenna (2 ea)		[16]CPO		CPO	CPO

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
AS-2892/APR-39(V)	Left Spiral Antenna (2 ea)		[16]CPO		CPO	CPO
C-9326/APR-39(V)	Control		[16]CPO		CPO	CPO
CM-440/APR-39(V)	Comparator		[16]CPO		CPO	CPO
IP-1150/APR-39(V)	Indicator		[16]CPO		CPO	CPO
R-1838/APR-39(V)	Receiver (2 ea)		[16]CPO		CPO	CPO
AN/APR-44(V)1 consisting of:	Radar Signal Detecting Set					
AS-3266/APR-44(V)	Antenna (2 ea)				CPO	CPO
C-10387/APR-44(V)	Control				CPO	CPO
F-1503/APR-44(V)	Low Pass Filter				CPO	CPO
R-2097/APR-44(V)	Radar Receiver				CPO	CPO
PROXIMITY WARNING						
YG-1054D1 consisting of:	Proximity Warning System					
10027834-101	Antenna	[18]2	[18]2			
HG-1001-AD01	Receiver-Transmitter	[18]1	[18]1			

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( )		UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
COUNTERMEASURES						
AN/ALQ-144(V)1 consisting of	Countermeasures Set					
C-10280/ALQ-144	Control					CPO
CY-7611/ALQ-144	Transit Case					CPO
T-1360(V)1/ALQ-144	Transmitter					CPO
AN/ARQ-33A consisting of	Countermeasures Set					
AB-1264/ARQ-33	Base				1	
AN/APN-171A(V)1	Radar Altimeter Set				1	
AN/ARC-131	VHF/FM Radio Set				1	
AN/GLR-9(V)11	Receiving Set				1	
AN/TLQ-17A(V)2	Countermeasures Set				1	
AN/UNH-16A	Recorder/Reproducer				2	
AS-1703/AR	Antenna				1	
AS-3381/ARQ-33	Antenna				1	
C-1611D/AIC	Intercomm Set				3	
C-8157/ARC	Control-Indicator				1	
C-8882/ARQ-33	Control-Indicator				1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( )		UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
C-8883/ARQ-33	Control-Indicator				1	
C-8983/ARQ-33	Control-Indicator				1	
CU-2245/ARQ-33	Antenna Coupler				1	
ID-1825/ARQ-33	Indicator-Panel				1	
J-3038/ARQ-33	Interconnecting Box				1	
J-3054/ARQ-33	Interconnecting Box				1	
J-3686/ARQ-33	Interconnecting Box				1	
MT-3802/ARC	Mount				1	
MT-4424/ARQ-33	Rack				1	
MT-4425/ARQ-33	Rack				1	
MT-4426/ARQ-33	Rack				1	
OJ-224A/ARQ-33	Console				1	
OJ-472/ARQ-33	Console				1	
RE-1078/ARQ-33	Relay Assembly				1	
RE-1124/ARQ-33	Relay Assembly				1	
SA-1823/ARQ-33	Switch Assembly				1	
SA-1862/ARQ-33	Foot Switch				2	
FM 10-30-1	Antenna				1	

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( )		UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
AN/ALQ-151 consisting of:	Countermeasures Set					
AM-7121/ALQ-151	Amplifier					1
AN/UYH-1	Recorder/Reproducer Set					1
AN/UYK-19	Computer					1
AN/UYQ-10(V)1	Plasma Display					1
AS-3130/ALQ-151	Antenna					4
C-1611( )/AIC	Intercomm Set					2
C-10026/USQ	Control-Indicator					1
C-10027/USQ	Control-Indicator					1
C-10050/USQ	Control-Indicator					1
C-10144/ALQ-151	Control-Indicator					1
C-11002/USQ	Control					1
F-1429/ALQ-151	Bandpass Filter					2
F-1515/ALQ-151	Low Pass Filter					1
ID-2090/ALQ-151	Panel Indicator					1
ID-2091/U	BDH Indicator					1
ID-1251/USQ	Panaramic Indicator					1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( )		UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
J-3400/ALQ-151	Distribution Box					1
J-3415/ALQ-151	Distribution Box					1
KY-836/ALQ-151	Keyboard					1
MX-9855/ALQ-151	DF Interface					1
MX-10250/USQ	Processor					1
MX-10251/USQ	Processor					1
OE-330/ALQ-151	Antenna Group					1
PP-6875A/UNH-16A	Power Supply					1
PP-7292A/USQ	Power Supply					1
PP-7293A/USQ	Power Supply					1
PP-7294A/USQ	Power Supply					1
PP-7472/TLQ-17A	Power Supply					1
R-2017/U	Receiver					2
R-2107/TLQ-17A	Receiver					1
RD-385A/UNH-16A	Recorder-Reproducer					1
RE-1131/ALQ-151	Relay Assembly					1
RT-1167/ARC-164	Radio Set					2

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( ) FUNCTION/TYPE NUMBER	NOMENCLATURE	UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
T-1386/TLQ-17A	Transmitter					1
TSEC/KG-45	Electronic Gey Generator					CPO
TSEC/KY-58	Comm Security Set					CPO
TT-580(V)1/U	Teleprinter					1
G-1169	Antenna					2
1951-1-1009	Power Line Filter					1
204-075-705-45	Caution Panel					1
3686-8000	Bite Antenna					1
5065792-1	Power Sensor					2
POWER SOURCES						
BB-433( )/A	Battery	1	1		1	1
PU-543( )/A	Inverter	2	2		2	2
MISCELLANEOUS						
AM-3209/ASN	Servoamplifier	1	1		1	1
ID-250( )/ARN	Radio Magnetic Indicator	1	1		1	1
ID-663C/U	Bearing-Distance-Heading Indicator					1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-1( )/EH-1( )		UH-1B/C/M	UH-1H	UH-1V (NOTE 1)	EH-1H	EH-1X (NOTE 2)
FUNCTION/TYPE NUMBER	NOMENCLATURE					
ID-998/ASN	Radio Magnetic Indicator	1	1		1	1
PP-7618/U	Power Supply (5V)			16_2		
TD-1136/A	Tunable Diplexer					1
SA-2357/A	Switch Assembly					1

2-2. Avionics and Surveillance Equipment Configurations (Con't).

NOTES:

1. Only UH-1V peculiar avionics are listed. Other installed/CPO items will depend on the TMS of the aircraft selected for UH-1V designation.
2. The EH-1X was still in development at the time of this printing. Therefore, the configuration shown is proposed only, not firm.
3. The C-1611 was replaced by the C-6533 and the MD-736 was replaced by the MD-1047 beginning with FY 71 aircraft.
4. Provisions for the AN/ARC-51 and AN/ARC-73 are superimposed in UH-1B/C/M aircraft thru 66-15105 and UH-1H aircraft thru 66-16306; therefore, either radio system may be installed but not both.
5. The AT-1108 is used with both UHF/AM and VHF/AM systems.
6. The AN/ARC-73 and T-366 systems were replaced by the AN/ARC-134 beginning with 66-15106 UH-1B/C/M aircraft and in 66-16307 thru FY 70 UH-1H aircraft. The AN/ARC-115 replaced the AN/ARC-134 beginning with FY 71 UH-1H aircraft and is a retrofit replacement for the AN/ARC-73 and T-366 systems in both UH-1B/C/M and UH-1H aircraft so equipped.
7. The AN/ARC-115 and RT-1354/ARC-186 are interchangeable; therefore, either may be installed but not both.
8. The AN/ARC-54 and AN/ARC-131 are interchangeable; therefore, either may be installed but not both.
9. Provisions for the AN/ARC-114 (#2 FM set) are standard in FY 71-76 UH-1H aircraft. Provisions in all other aircraft may be added by a retrofit installation.
10. The AS-1703 and CU-942 are used with the AN/ARC-54/131 system and the FM 10-30-1 is used with the AN/ARC-114 system in all aircraft except FY 71-76 UH-1H aircraft in which the AS-1703 and CU-942 are used with the AN/ARC-114 and the FM 10-30-1 is used with the AN/ARC-54/131.
11. Provisions for the CU-991 and MT-1719 were replaced by provisions for the CU-1658 and MT-3772 beginning with FY 68 aircraft.
12. Either provisions for the KY-28 (including C-8157) or the KY-58 (including Z-AHP and Z-AHQ) are installed, not both.
13. The J-2 system was replaced by the AN/ASN-43 beginning with 66-15148 UH-1B/C/M aircraft and 66-16449 UH-1H aircraft. The CN-405 and T-611 are common to both.
14. The AN/ARN-59 system was replaced by the AN/ARN-83 beginning with 66-602 UH-1B/C/M aircraft and 66-746 UH-1H aircraft.
15. The AN/ARN-30 system (including the CV-1275) was replaced by the AN/ARN-82 beginning with 66-602 UH-1B/C/M aircraft and 66-746 UH-1H aircraft.
16. Retrofit Installation.
17. All UH-1( ) aircraft were originally delivered with the MC-1 installed. However, it is presently being removed (with no replacement) during depot overhaul.
18. Equipment installed only in aircraft located at Ft. Bragg, Ft. Campbell, Ft. Hood and Ft. Rucker.

APPLICABLE AIRCRAFT AVIONICS MANUALS:

TM 11-1520-207-20P (Pertains to UH-1B)
TM 11-1520-207-35P (Pertains to UH-1B)
TM 11-1520-210-20 (Pertains to UH-1H FY 63-70)
TM 11-1520-210-20-1 (Pertains to UH-1H FY 71 & Sub)

2-2. Avionics and Surveillance Equipment Configurations (Con't).

TM 11-1520-210-20P (Pertains to UH-1H FY 63-70)
TM 11-1520-210-20P-1 (Pertains to UH-1H FY 71 & Sub)
TM 11-1520-210-34-1 (Pertains to UH-1H FY 71 & Sub)
TM 11-1520-210-34P (Pertains to UH-1H FY 63-70)
TM 11-1520-210-34P-1 (Pertains to UH-1H FY 71 & Sub)
TM 11-1520-210-35 (Pertains to UH-1H/EH-1H)
TM 11-1520-211-20 (Pertains to UH-1B/C/M)
TM 11-1520-211-35 (Pertains to UH-1B/CM)
TM 11-1520-242-20P (Pertains to EH-1H)
TM 11-1520-242-30P (Pertains to EH-1H)

2-2. Avionics and Surveillance Equipment Configurations (Con't).

The following configuration depicts a typically configured UH-60A. The actual configuration may vary depending on peculiar geographic requirements or changes incorporated through MWO action and special purpose alterations.

FUNCTION/TYPE NUMBER	NOMENCLATURE	UH-60A				
INTERCOMM						
C-6533/ARC	Intercomm Set	5				
UHF-AM RADIO						
RT-1167/ARC-164	Radio Set	1				
AS-3524/A	UHF Antenna	1				
VHF/AM RADIO						
AN/ARC-115( )	Radio Set	1[1]				
RT-1354/ARC-186	Radio Set	1[1]				
F-1522/A	VHF Band Pass Filter	1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-60A						
FUNCTION/TYPE NUMBER	NOMENCLATURE	UH-60A				
70600-01019-104	VHF Antenna	2_1				
VHF/FM RADIO						
AN/ARC-114( )	Radio Set (#1 FM)	1				
AN/ARC-114( )	Radio Set (#2 FM)	CPO				
AS-3522/A	#1 FM Homing Antenna (LH)	1				
AS-3523/A	#1 FM Homing Antenna (RH)	1				
CU-2284/A	#2 FM Antenna Coupler	1				
LPF40-02B	FM Low Pass Filter	2				
70600-01019-104	#2 FM Comm Antenna	2_1				
70600-06002-105	#1 FM Comm Antenna	1				
SECURE VOICE						
S1660-60036-1	Mount	3				
C-8157/ARC	Control-Indicator	3_3				
Z-AHP	Remote Control Unit	3_3				
Z-AHQ	Interface Adapter	3_3				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-60A						
FUNCTION/TYPE NUMBER	NOMENCLATURE	UH-60A				
TSEC/KY-28	Comm Security Set	3CPO				
TSEC/KY-58	Comm Security Set	3CPO				
GYRO COMPASS						
AN/ASN-43 consisting of:	Gyro Compass Set					
CN-405/ASN	Compensator	1				
CN-998( )/ASN	Directional Gyro	1				
T-611/ASN	Compass Transmitter	1				
C-8021A/ASN-75	Compass Control	1				
ADF						
AN/ARN-89B consisting of:	Direction Finder Set					
AM-4859A/ARN-89	Amplifier	1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-60A						
FUNCTION/TYPE NUMBER	NOMENCLATURE	UH-60A				
AS-2108A/ARN-89	Loop Antenna	1				
C-7392A/ARN-89	Control	1				
R-1496A/ARN-89	Receiver	1				
70600-01019-104	Sense Antenna	2 1				
VOR/MB/GS						
AN/ARN-123(V)4 consisting of:	Receiving Set					
C-10048/ARN-123(V)	Control	1				
MT-4834/ARN-123(V)	Mount	1				
R-2139/ARN-123(V)	Receiver	1				
AS-3525/A	MB Antenna	1				
AS-3526/A	VOR Antenna	1				
AS-3527/A	GS Antenna	1				
DOPPLER NAVIGATION						
AN/ASN-128 consisting of:	Doppler Navigation Set					
CP-1252/ASN-128	Computer-Display Unit	1				
CV-3338/ASN-128	Signal Data Converter	1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-60A						
FUNCTION/TYPE NUMBER	NOMENCLATURE	UH-60A				
RT-1193/ASN-128	Receiver-Transmitter-Antenna	1				
RADAR ALTIMETER						
AN/APN-209( )(V)2 consisting of:	Radar Altimeter Set					
AS-2595/APN-194(V)	Antenna	2				
ID-1917/APN-209(V)	Height Indicator	1				
RT-1115( )/APN-209(V)	Receiver-Transmitter-Height Indicator	1				
COMMAND INSTRUMENT SYS						
C-10998/A	HSI/VSI Mode Select Panel	2				
C-10999/A	CIS Mode Select Panel	1				
CP-1470/A	CIS Processor	1				
ID-2277/A	Vertical Situation Indicator	2				
ID-2278/A	Horizontal Situation Indicator	2				
MT-6226/A	Mount (CP-1470)	1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-60A

FUNCTION/TYPE NUMBER	NOMENCLATURE	UH-60A				
IDENTIFICATION						
RT-1296/APX-100	Transponder	1				
AS-3528/A	IFF Antenna	2				
MT-3949A/U	Mount (KIT-1A)	1				
KIT-1A/TSEC	IFF Computer	CPO				
ATTITUDE INDICATING						
CN-1314/A	Displacement Gyro	2				
RATE-OF-TURN-INDICATING						
TRU-2A/A	Rate Gyro	2				
RADAR WARNING						
AN/APR-39(V)1 consisting of:	Radar Signal Detecting Set					
AS-2890/APR-39(V)	Blade Antenna	CPO				
AS-2891/APR-39(V)	Right Spiral Antenna (2 ea)	CPO				
AS-2892/APR-39(V)	Left Spiral Antenna (2 ea)	CPO				
C-9326/APR-39(V)	Control	CPO				
CM-440/APR-39(V)	Comparator	CPO				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-60A		UH-60A				
FUNCTION/TYPE NUMBER	NOMENCLATURE					
IP-1150/APR-39(V)	Indicator	CPO				
R-1838/APR-39(V)	Receiver (2 ea)	CPO				
STABILIZATION						
AM-7105/A	Synchro Signal (SAS) Amplifier	1				
AM-7106/A	Elec Control (Stabilator) Amplifier	2				
C-10909/A	Flight Control Panel	1				
CN-1552/A	Rate Gyro	1				
CN-1564/A	Rate Gyro	1				
CP-1446/A	Computer	1				
ID-2279/A	Stabilator Indicator	2				
MT-6227/A	Vibration Tray	1				
TR-322/A	Air Data Transducer	1				
TR-323/A	Air Speed Transducer	1				
TR-326/A	Linear Servo Accelerometer	2				
70400-06712-042	Stab. Position Sensor	1				
70901-02002-106	Stick Position Sensor	1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

UH-60A		UH-60A				
FUNCTION/TYPE NUMBER	NOMENCLATURE					
COUNTERMEASURES						
AN/ALQ-144(V)1 consisting of:	Countermeasures Set					
C-10280/ALQ-144	Operators Control Unit	CPO				
CY-7611/ALQ-144	Transit Case	CPO				
T-1360(V)1/ALQ-144	Transmitter	CPO				
POWER SOURCES						
BB-716/A	Battery	1				
CV-3701/A	Power Converter	1				
PP-7723/A	Battery Charger	1				
MISCELLANEOUS						
C-11038/A	Retransmission Control	1				
J-3766/A	Audio Interface Unit	1				
H-250/U	Troop Commanders Handset	1				
70600-06001-103	Troop Commanders Antenna	1				

2-2. Avionics and Surveillance Equipment Configurations (Con't).

NOTES:

1. The AN/ARC-115 was replaced by the RT-1354/ARC-186 beginning with FY 81 production aircraft (81-23547). However, they are interchangeable so either may be installed but not both.
2. Used as the VHF/AM, VHF/FM #2 and ADF sense antenna.
3. Either provisions for the KY-28 (including C-8157) or the KY-58 (including Z-AHP and Z-AHQ) are installed but not both.

APPLICABLE AIRCRAFT AVIONICS MANUALS:

TM 11-1520-237-23-1
TM 11-1520-237-23-2
TM 11-1520-237-23-3
TM 11-1520-237-23P

2-3. Aircraft Armament.

The following aircraft armament subsystems and related components are either in the Research and Development state, or have been type classified for field usage.

2-4. Aircraft Armament Application.

ARMT SS	AIRCRAFT APPLICATION														
	UH-1			AH-1				OH-6A	OH-58		CH-47				AH-64A
	B	M	H	G	S*	S#	S##		A	C	A	B	C	D	A
M5	X	X													
M18A1				X	X	X	X								
M19	X		X												
M21	X	X													
M22	X														
M23			X												
M27								X	X						
M35				X											
M28A1				X											
M28A2					X										
M28A3						X									
M24											X			X	
M41											X	X	X	X	
M56			X												
M65					X	X	X								
XM97E1							X								
M128					X										
M136						X	X								
M138						X	X								

S*(AH-1S(Modified)

S#(AH-1S(PROD))

S#(AH-1S)

2-4. Aircraft Armament Application (Con't).

ARMT SS	AIRCRAFT APPLICATION							
	UH-1			AH-1				AH-64A
	B	M	H	G	S*	S#	S##	A
M156	X	X						
M158A1	X	X		X	X	X	X	
M200A1	X	X		X	X	X	X	
XM260								X
XM261								X
M230								X
HMMS 1/								X

*AH-1S (MOD) from AH-1G models

#AH-1S new production

AH-1S modernized from AH-1S (MOD)

1/ Hellfire Module Missile System (HMMS)

SOURCE: (ARRCOM) DRSAR-MAG-SD
(MICOM) DRCPM-RK
(MICOM) DRCPM-HF

2-5. UH-1B, and M Armament Configurations.

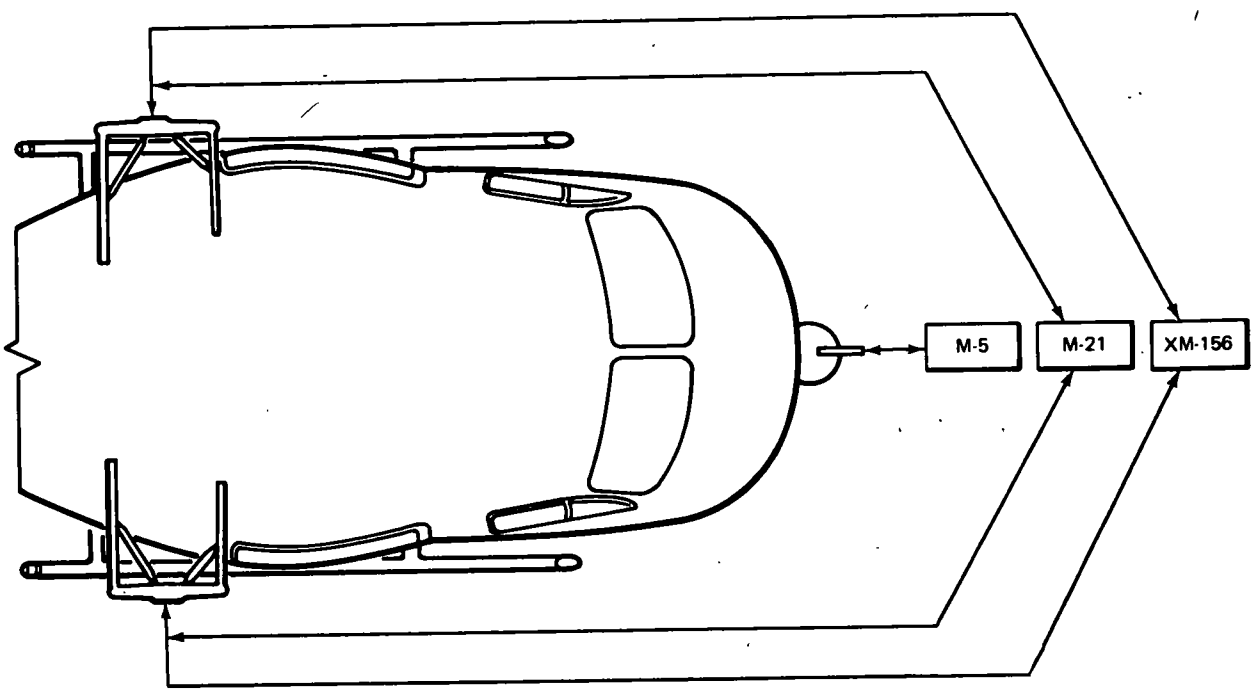


Figure 2-1. UH-1B, and M Armament Configurations

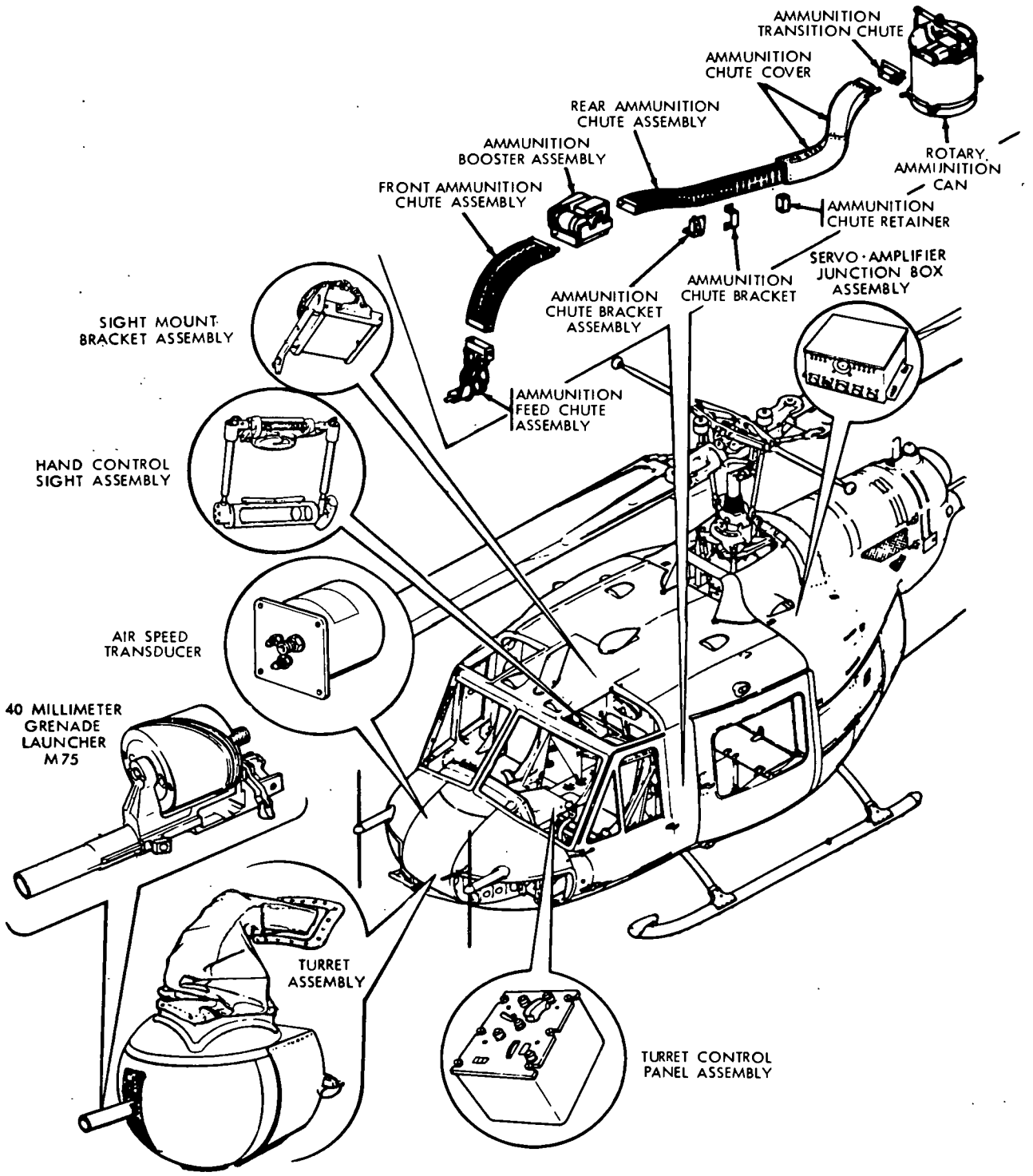


Figure 2-2. M5 Armament Subsystem Components on UH-1B/M (Iroquois) Helilcopter

2-6. M5 Armament Subsystem, Grenade Launcher.

ARMAMENT SUBSYSTEM: M5
APPLICABLE AIRCRAFT – TYPE, MODEL, SERIES: Utility UH-1 B/M
AVERAGE PROCUREMENT PRICE: $41,607
TYPE CLASSIFICATION: Standard
LOGISTIC CONTROL CODE: A

NOMENCLATURE: Armament subsystem, helicopter, 40 millimeter grenade launcher. Nose mounted turret (1 launcher). M75 Grenade Launcher, air cooled, electric motor driven.

DESCRIPTION: The M5 is used on the UH-1B/M helicopters, and consists of a flexible remote controlled, servo-power driven gun turret mounted in the nose of the UH-1B/M helicopters. The turret incorporates one M75 grenade launcher. Linked ammunition is stored in a rotary ammo drum in the cargo hook hole, pulled through a flexible chute by an ammo booster, and fed to the grenade launcher. The system also has a box feed system in addition to the rotary AMMO drum. A master armament control panel is located in the instrument console and is accessible to both the pilot and copilot gunner. A flexible hand control sight assembly mounts above the co-pilot's seat from which the co-pilot can sight and fire the system. The subsystem can also be fired in the stow position by either the pilot or co-pilot by means of a trigger switch on both cyclic stick grips. In this mode, the turret is flexible in elevation. An MWO has been applied to the subsystem to give the sight lead angle compensation. A dual range reticle has been applied for more accuracy at long range.

CHARACTERISTICS:

EFFECTIVE RANGE:		1500 meters	
ELEVATION/DEPRESSION:		+15°, -35°	
MUZZLE VELOCITY:		790 FPS	
RATE OF FIRE:		230 SPM	
TRAVERSE:		60° right and left	
EMPTY WT:	Box Fed: 233 lbs Rotary Drum Fed: 223 lbs	LOADED WT:	335 lbs (*150 rds) 459 lbs (**300 rds)
AMMUNITION:			
TYPE:		Linked 40mm ammunition.	
CAPACITY:		*150 rds **300 rds respectively	
SIGHTING:		Reflex type: gunner/co-pilot operated in elevation and deflection.	

MAINTENANCE AND SUPPLY:

	AVUM	AVIM and Depot
a. Maintenance Instruction:	TM 9-1010-207-12	Support TM 9-1010-207-35
b. Repair parts:	TM 9-1010-207-12,20P	34P
c. Special tools:	TM 9-1010-207-12,20P	34P
d. Shop sets: Not Applicable		

2-6. M5 Armament Subsystem, Grenade Launcher (Con't).

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENTS
A	1560-00-753-7294	MWO 55-1520-211-34/33	B17	DA Allocated
C	1010-00-738-5811	TM 9-1010-207-12	B14	DA Allocated
*RAC	1560-00-936-4334	MWO 55-1520-211-30/32	B17	DA Controlled

Initial issue of kits is DA Controlled and Procurement Appropriation Army (PAA) funded. Repair parts other than initial MWO procurement items are stock funded.

*RAC – Rotary Ammo Can – Required to upgun the M5 subsystem.

Operational instructions for subsystem can be found in TM 66-1520-220 series manual.

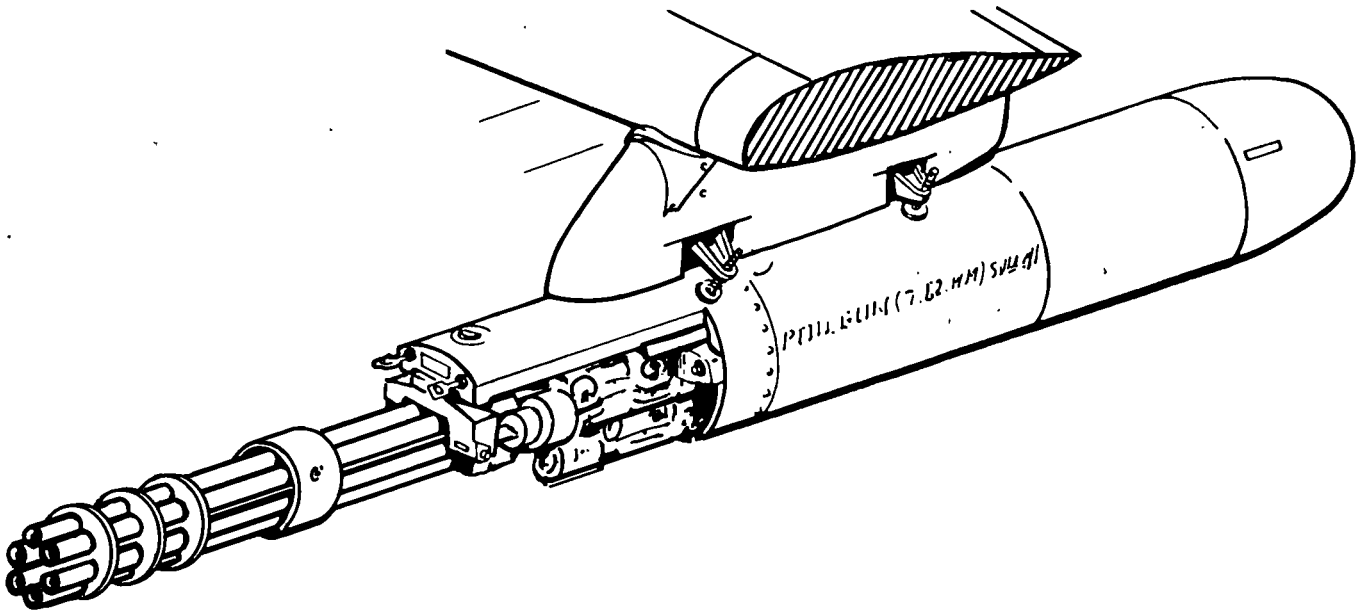


Figure 2-3. M18A1 Armament Subsystem

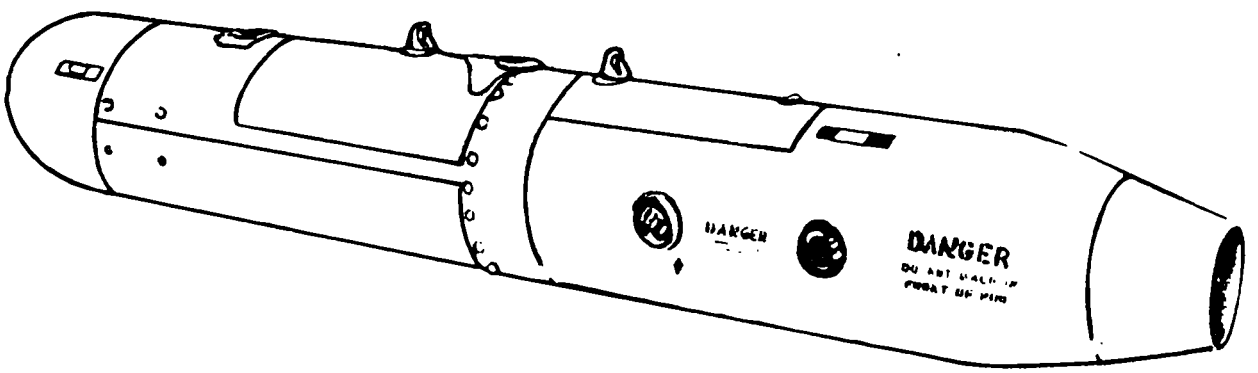


Figure 2-4. M18A1 Armament Subsystem

2-7. M18A1 Armament Subsystem.

ARMAMENT SUBSYSTEM: M18A1
APPLICABLE AIRCRAFT TYPE MODEL AND SERIES: Attack helicopter AH-1 SERIES
AVERAGE PROCUREMENT PRICE: $20,070
TYPE CLASSIFICATION: Standard
LOGISTIC CONTROL CODE: A

NOMENCLATURE: Armament pod, helicopter, 7.62mm machine gun: high-rate

DESCRIPTION: The M18A1 armament pod consists of one 7.62mm automatic gun, M134, in a cylindrical pod mounted on the inboard wing stores of the aircraft. The pod stores 1500 rounds of ammunition in a linkless feed system. The gun is electrically driven at either low rate, 2000 shots per minute, or high rate, 4000 shots per minute. The pod is self-powered by a self contained battery with a power start feature using auxiliary aircraft power for more starting torque. The pod is rigidly mounted and aiming is accomplished by maneuvering the aircraft.

CHARACTERISTICS:

MAXIMUM EFFECTIVE RANGE:		1500 meters	
ELEVATION:		Fixed	
MUZZLE VELOCITY:		2750 FPS	
RATE OF FIRE:		2000 or 4000 SPM	
TRAVERSE:		Fixed	
EMPTY WT:	240 lbs	LOADED WT:	320 lbs
AMMUNITION:			
TYPE:		Linked 7.62mm	
CAPACITY:		1500 rds	
SIGHTING:		M73 Reflex type	

MAINTENANCE AND SUPPLY:

	AVUM	AVIM and Depot
Maintenance instruction:	TM 9-1005-257-12	Support TM 9-1005-257-35
Repair parts:	TM 9-1005-257-20P	35P
Special tools	TM 9-1005-257-20P	35 and 35P
Shop sets: Not Applicable		

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENTS
	1005-00-832-7498	TM 9-1005-257-12	B14	DA controlled

Operational instructions for subsystem can be found in TM 55-1520-221-10.

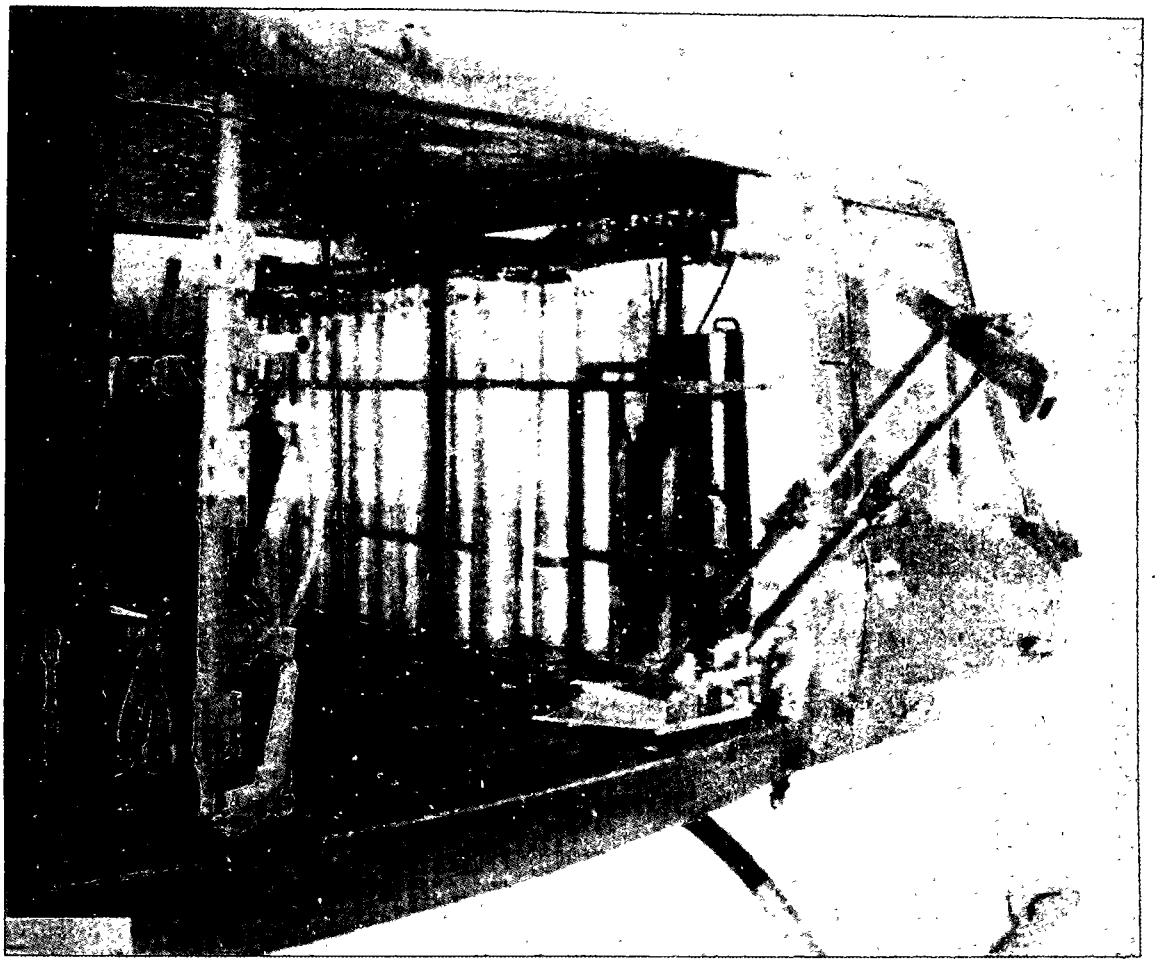


Figure 2-5. M19 Dispenser

2-8. M19 Dispensing Subsystem.

Dispenser:	M19
Aircraft:	UH-1/B/H
Average procurement price:	$1,500
Application:	One in troop cargo compartment
Flares per dispenser:	24 Flares, MK45 w/adapter
Weight:	150 lbs empty
	822 lbs with flares
Overall Length:	118 inches w/snout extended
	81.0 inches w/snout collapsed
Width:	16.0 inches
Height:	46.0 inches
Rate of Ejection:	Manually controlled
Elevation:	Attitude of aircraft
Transverse:	Attitude of aircraft
Sighting:	Visual assessment
Status:	LP
DODIC:	L106

DESCRIPTION: MK45 Flares are loaded into the dispenser with pull cable assembly disk inserted in the overhead track. Immediately prior to launch, the flare safety pin is pulled. The flare to be launched is positioned so that its base is stopped by the foot on the base tray. The operator then pushes the upper portion of the flare outward. The base of the flare then swings outward, providing sufficient force on the pull cable assembly to shear a pin, permitting the flare to fall free. A pull pin is provided for manual jettisoning of the load and flare rack.

MK45 Flare, Aircraft, Parachute.

Illumination:	2,000,000 candlepower
Burntime:	210 seconds
Weight:	28 lbs
Overall Length:	36 inches
Diameter:	4.87 inches
Adjustable Time:	Mechanical/pyrotechnic fuze
Status:	Std
Logistic Control Code:	B
DODIC:	1370-L424

DESCRIPTION: Prior to launch, the fuze is set for the desired drop delay (in feet below the aircraft), and the safety pin removed. When launched, the weight of the falling flare against the pull cable exerts sufficient force to break a shear pin to initiate the delay and subsequently ignite the fuze. At the desired time, the parachute/candle assembly is ejected from the outer container, and activated. Near the end of burning, the parachute is collapsed and the spent flare falls rapidly to the ground.

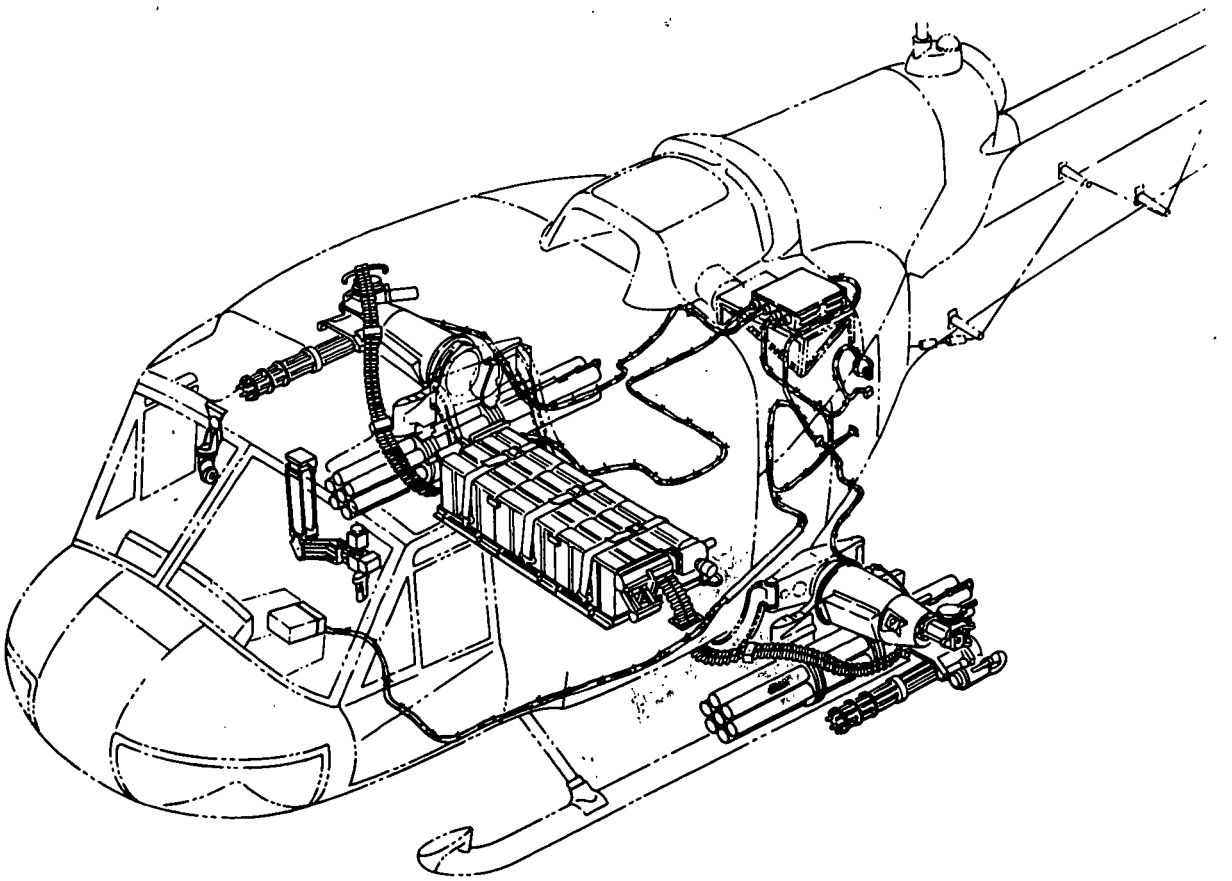


Figure 2-6. M21 Armament Subsystem Installed on UH-1B/M (Iroquois) Helicopter

2-9. M21 Armament Subsystem

ARMAMENT SUBSYSTEM: M21
APPLICABLE AIRCRAFT – TYPE, MODEL, SERIES: Utility aircraft, UH-IB, M
AVERAGE PROCUREMENT PRICE: $51,897
TYPE CLASSIFICATION: Standard
LOGISTIC CONTROL CODE: A

NOMENCLATURE: Armament subsystem, helicopter, 7.62mm twin high rate machine gun with 2.75 inch rocket launchers.

DESCRIPTION: The M21 armament subsystem combines the 7.62 mm, high rate of fire machine gun M134 and the 2.75 inch Folding Fin Aerial Rocket (FFAR), M158A1 launchers. The subsystem consists of two remotely controlled, power operated, flexible pylons, each mounting one 7.62mm machine gun MI34 and provisions for a non-flexible rocket pod containing seven 2.75 inch FFAR. The rocket launcher installation on each pylon contains associated hardware to fire the rockets and to jettison the launcher. Linked 7.62mm ammunition is stowed inboard and transported to the guns through flexible chuting. A flexible sighting system enables the copilot to remotely aim and fire the machine guns. The pilot may fire either the rockets or the machine guns when in stow position using a fixed sight. The subsystem utilizes all standard 7.62mm NATO ammunition and 2.75 inch rockets applicable to the M158A1 launcher.

CHARACTERISTICS:

MAXIMUM EFFECTIVE RANGE:	ELEVATION DEPRESSION:
Machine Gun: 1500 meters	Machine Gun: +10° to -85°
Rocket: 3000 meters	Rocket Launcher: Boresight only
RATE OF FIRE:	2000 or 4000 SPM
MUZZLE VELOCITY:	2750 FPS
TRAVERSE:	Machine guns, inboard 12°, outboard 70° in azimuth from longitudinal axis
SIGHTING:	Pilot-manual reflex type for machine gun and rocket. Copilot/gunner flexible reflex type sight for machine gun only
EMPTY WEIGHT: 804 lbs	LOADED WEIGHT: 1179.2 lbs
AMMUNITION:	
TYPE:	Linked 7.62MM
CAPACITY:	6000 rds
ROCKETS:	
TYPE:	2.75 inch FFAR
CAPACITY:	14 RDS

2-9. M21 Armament Subsystem (Con't).

MAINTENANCE AND SUPPLY:

	AVUM	AVIM and Depot
Maintenance Instruction:	TM 9-1090-202-12	Support TM 9-1090-202-35
Repair Parts:	TM 9-1090-202-20P	-34P*
Special Tools:	TM 9-1090-202-20P	-34P*

*To be published

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENT
A	1560-00-915-8931	MWO 55-1520-211-30/8	B17	DA Allocated
B	1560-00-915-8933	TM 55-1520-211-20/5	B17	DA Allocated
C	1090-00-923-5971	TM 9-1090-202-12	B14	DA Allocated
	*1560-00-923-3182	MWO 55-1520-211-30/12	B17	Free Issue

Initial issue of kits is DA Allocated, DA Controlled, and Procurement Appropriation Army (PAA) funded. Repair parts other than initial MWO procurement items are stock funded.

Operational instructions for subsystem can be found in TM 55-1520-220 series manual.

*Sight Stow Bracket required if not previously installed.

In addition to the above, these modifications can be installed only in aircraft which have the following provisions:

M3/M6 "A" Kit, FSN 1560-960-4043, publication MWO 55-1520-221-40/4, NICP B17, DA Allocated M16 "A" Kit, FSN 1560-918-7007, publication MWO 55-1520-211-30/4, NICP B17.

Initial issue of rocket launchers, M158A1, FSN 1055-00-805-0689, is provided with subsystem.

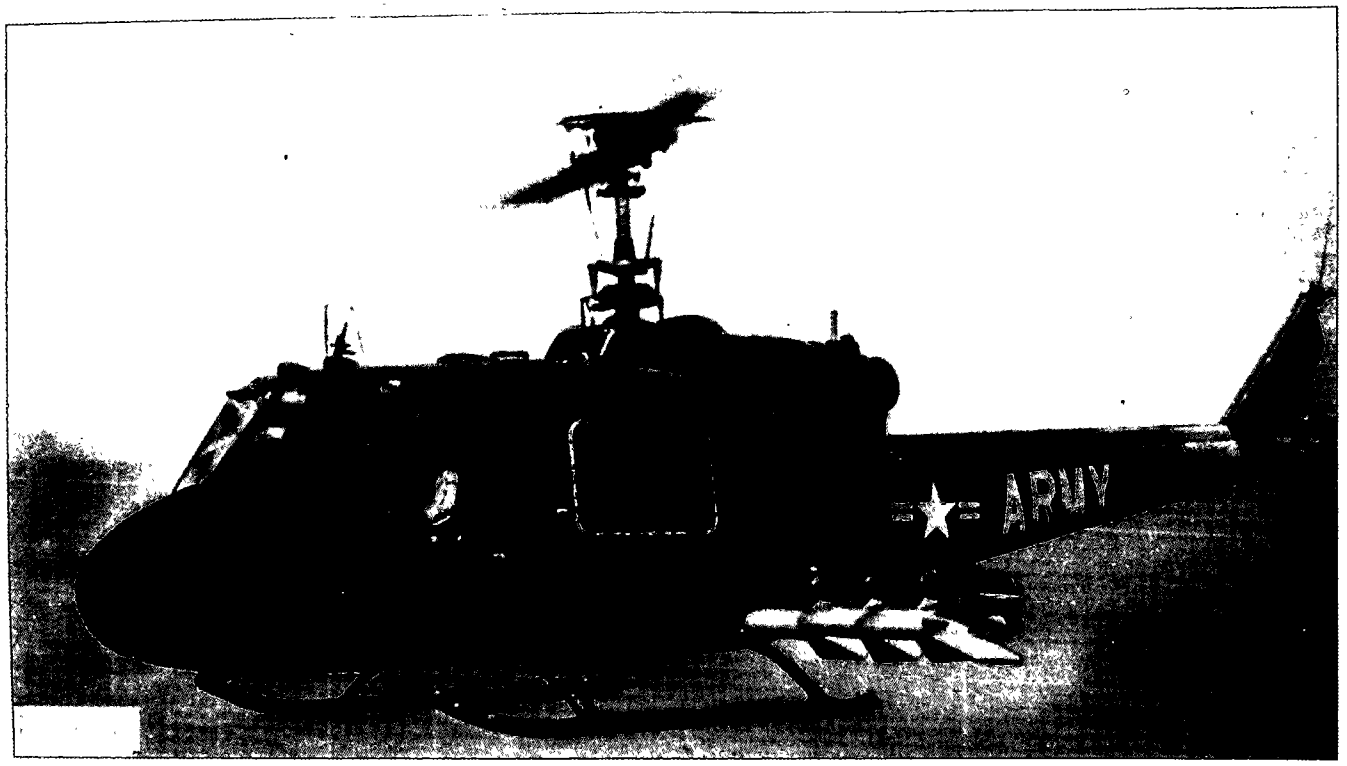


Figure 2-7. M22 Armament System Installed on UH-1B (Iroquois) Helicopter

2-10. M22 Armament Subsystem, Guided Missile Launcher.

ARMAMENT SUBSYSTEM: M22
APPLICABLE AIRCRAFT – TYPE, MODEL, SERIES: UH-1B
AVERAGE PROCUREMENT PRICE: $34,000 (estimate)
TYPE CLASSIFICATION: Standard
LOGISTIC CONTROL CODE: A

NOMENCLATURE: Armament subsystem, helicopter, guided missile launcher.

DESCRIPTION: The M22 system includes a guidance control box, missile selector box, control stick, and six launchers. Items required to complete the airborne subsystem are an MK-8 pilots sight, a stabilized optical 6X sight for the gunner, two booms for mounting launchers (three per side), and jettisoning equipment. An adaption kit is required for attachment of system components to the helicopter. Operation of the subsystem requires close coordination between pilot and co-pilot/gunner.

CHARACTERISTICS:

EFFECTIVE RANGE:	3000 meters
ELEVATION:	Missile directed in flight by wire command link.
MISSILE VELOCITY:	180 meters/second cruise
RATE OF FIRE:	As selected by pilot/gunner.
TRAVERSE:	Missile directed in flight by wire command link.
EMPTY WT: 272 lbs	LOADED WT: 650 lbs
MISSILE CAPACITY:	6 missiles (3 each side)
AMMO TYPE:	AGM-22B Missile, 63 lbs each
SIGHTING:	Pilot MK8 lighted roof mounted. Co-pilot/gunner 6x42 power anti-collision binocular (M-55) or monocular (M-58.)
DATA:	Complete outboard stores are jettisonable, or each missile.

MAINTENANCE AND SUPPLY:

Maintenance instruction:	AVUM AVIM support
	TM 9-1400-461-20 and -35
Repair parts:	TM 9-1400-461-12P and -35P
Special tools:	TM 9-1400-461-12P and -35P
Shop sets:	TM 9-1400-461-12P and -35P

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:
Operational Instructions contained in TM 55-1520-219-10.

2-11. UH-1H Armament Configurations.

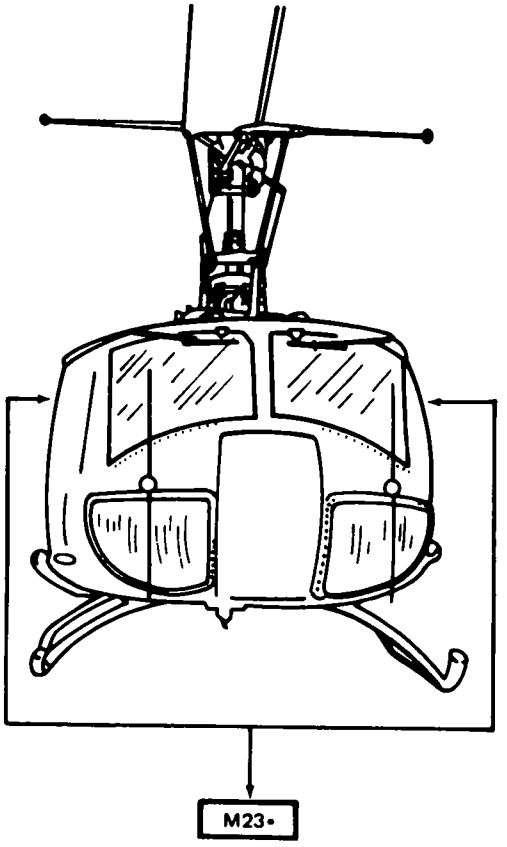


Figure 2-8. UH-1H Armament Configurations

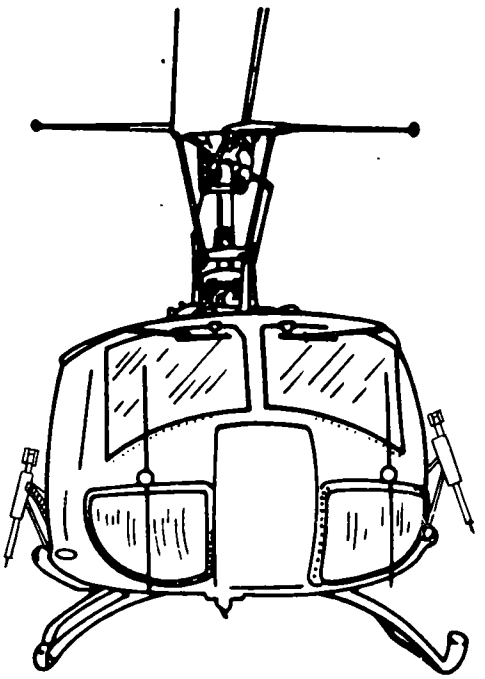


Figure 2-9. M23 Armament Subsystem on UH-1H (Iroquois) Helicopter

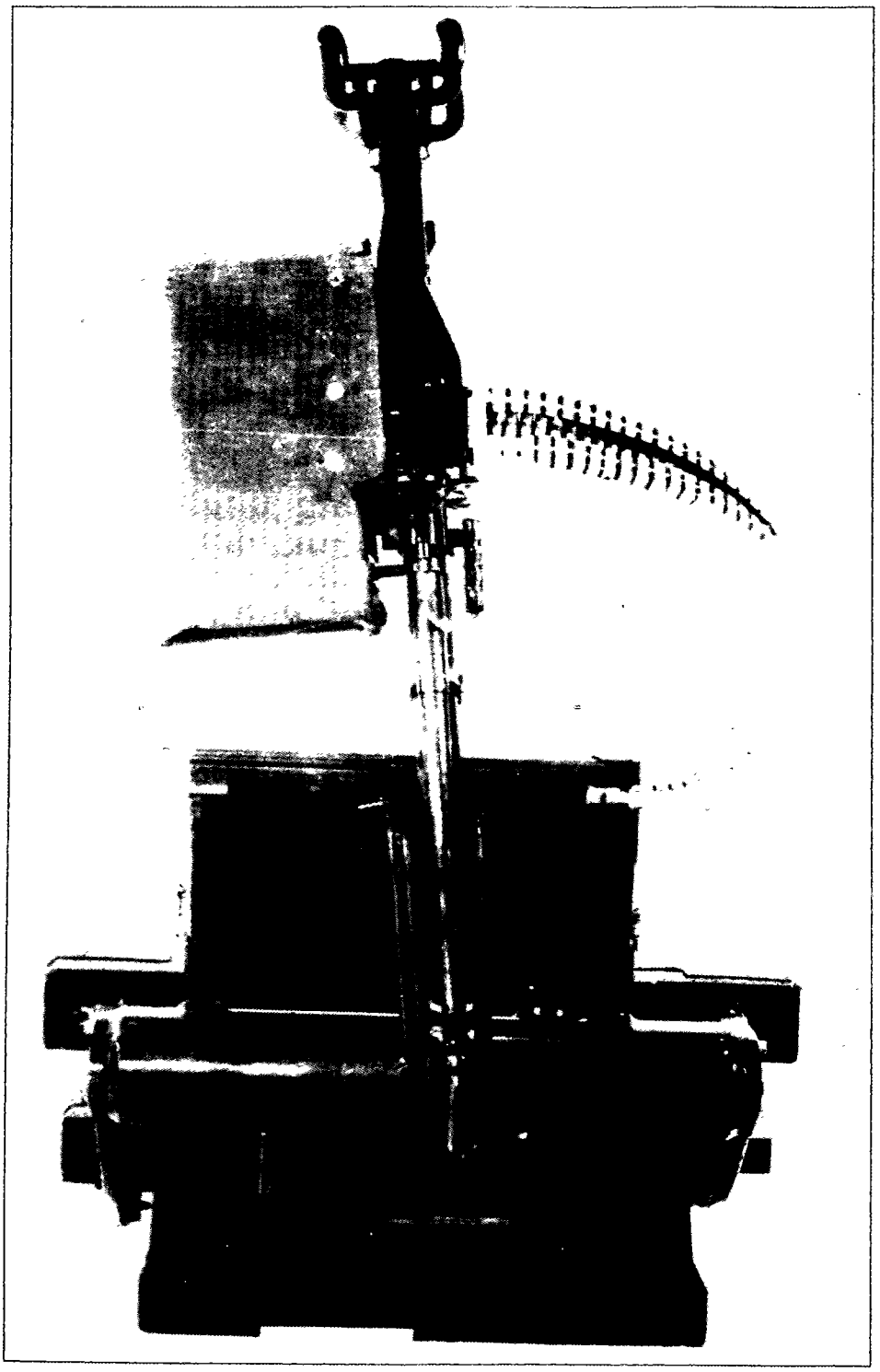


Figure 2-10. M23 Armament Subsystem in Forward Stowed Position (Front View)

2-12. M23 Armament Subsystem.

ARMAMENT SUBSYSTEM: M23
APPLICABLE AIRCRAFT TYPE, MODEL, SERIES: Utility UH-1H
AVERAGE PROCUREMENT PRICE: $4,282
TYPE CLASSIFICATION: Standard
LOGISTIC CONTROL CODE: A

NOMENCLATURE: Armament subsystem, helicopter, door pintle mounted 7.62mm machine gun, M60D.

DESCRIPTION: The M23 armament subsystem consists of two 7.62mm, machine guns, M60D, and two mounts; one on each side of the aircraft in the doorways. The pintle post assembly is attached to a base tube assembly which is attached to hard points on the helicopter fuselage. The machine gun, which is a belt fed, gas operated, air-cooled automatic weapon, is attached to a pivot cradle on top of the pintle post. The base can be employed at either the right or left side, and the pedestal is designed for right or left installation. The machine gun installs on either right or left pintle mounts without adaptation, and is a modified machine gun, M60, with aircraft ring type sights, spade grips and an improved feed system. A rapid reloading capability is provided by a 550 round ammunition box attached to the weapon by a flexible chute. A canvas bag attaches to the right side of the receiver to catch links and ejected cartridges. Free traverse and elevation is allowed within fixed stop limits to prevent self-inflicted damage to the helicopter. The subsystem utilizes all standard 7.62mm ammunition.

CHARACTERISTICS:

MAXIMUM EFFECTIVE RANGE:	1100 meters		
ELEVATION FORWARD:	+3.5°, AFT +6.5°	DEPRESSION	-80°
MUZZLE VELOCITY:	2750 FPS		
RATE OF FIRE:	550 SPM		
TRAVERSE:	2° to 178° in Azimuth		
EMPTY WGT: 173 lbs	LOADED WGT:	210 lbs	
AMMUNITION:			
CAPACITY:	550 rounds per gun		
TYPE:	Linked 7.62mm		
SIGHTING:	Aircraft ring type		

MAINTENANCE AND SUPPLY:

	AVUM	AVIM and Depot
Maintenance Instruction:	TM 9-1005-262-14	
Repair parts:	TM 9-1005-262-24P	
Special tools:	TM 9-1005-262-24P	
Shop sets:	Not Applicable	

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENTS
	1005-00-907-0720	TM 9-1005-262-15	B14	DA Controlled

Operational instructions for subsystem can be found in TM 9-1005-262-15.

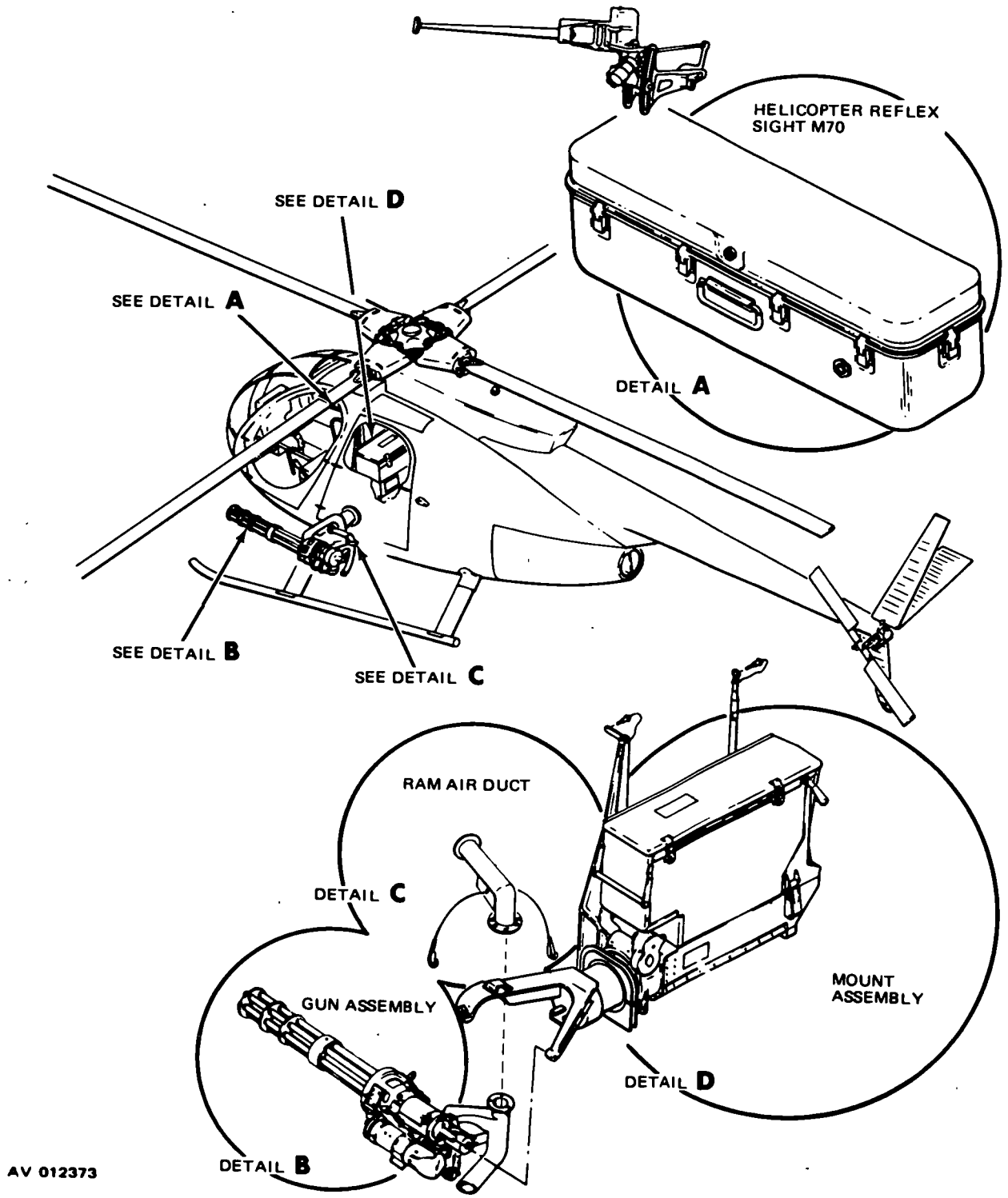


Figure 2-11. M27 Armament System Components (OH-6A Application)

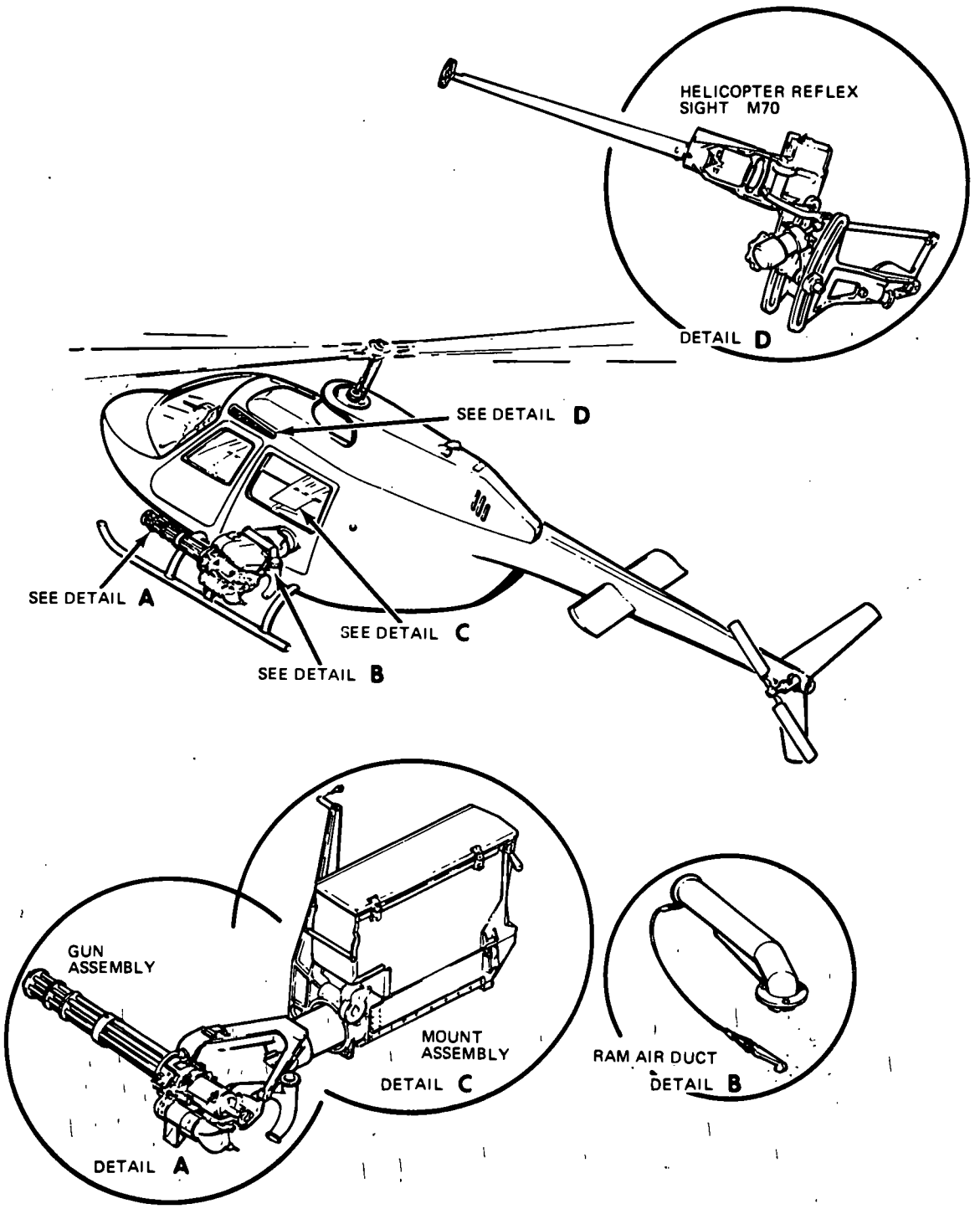


Figure 2-12. M27 (OH-58A Application)

2-13. M27 Armament Subsystem.

ARMAMENT SUBSYSTEM: M27
APPLICABLE AIRCRAFT – TYPE, MODEL, SERIES: OH-6A, OH-58A
AVERAGE PROCUREMENT PRICE: $25,439
TYPE CLASSIFICATION: Standard
LOGISTIC CONTROL CODE: B

NOMENCLATURE: Armament subsystem, helicopter, 7.62mm machine gun; high rate M27

DESCRIPTION: The M27 armament subsystem mounts the high rate of fire 7.62mm machine gun M134. The subsystem consists of a single, remote controlled, semi-flexible mount which supports the machine gun, M134, on the left (port) side of the OH-6 and OH-58 helicopters. Linked 7.62mm ammunition is stored inboard and transported to the gun through fixed chuting. A flexible, mechanically linked sighting system enables the pilot to remotely aim and fire the machine gun. The weapon subsystem is flexible in elevation and depression only, being fixed in azimuth. The aircraft must be aimed by the pilot for target engagement. The armament subsystem is adaptable to the helicopter by means of quick release attachments. Complete internal provisions are incorporated in the production aircraft to accept the armament subsystem without modifications. The weapons subsystem complements weapon systems currently employed in the field.

CHARACTERISTICS:

MAXIMUM EFFECTIVE RANGE:		1500 meters	
ELEVATION/DEPRESSION:		OH-6A +10°, to -24°	
		OH-58A +5 1/2° to -20°	
MUZZLE VELOCITY:		2750 FPS	
RATE OF FIRE:		2000 or 4000 SPM	
TRAVERSE:		None	
EMPTY WT:	100 lbs	LOADED WT:	234 lbs
AMMUNITION:			
CAPACITY:		2000 rds.	
TYPE:		Linked 7.62mm	
SIGHTING:		Pilot M70 reflex type	

MAINTENANCE AND SUPPLY:

	AVUM	AVIM and Depot
Maintenance Instruction:	TM 9-1005-298-12	-34
Repair parts:	TM 9-1005-298-20P	-35P
Special tools:	TM 9-1005-298-20P	-35P
Shop sets:	Not Applicable	DMWR 9-1005-298

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENT
C	1005-00-933-6242	TM 9-1005-298-12	B14	DA Allocated

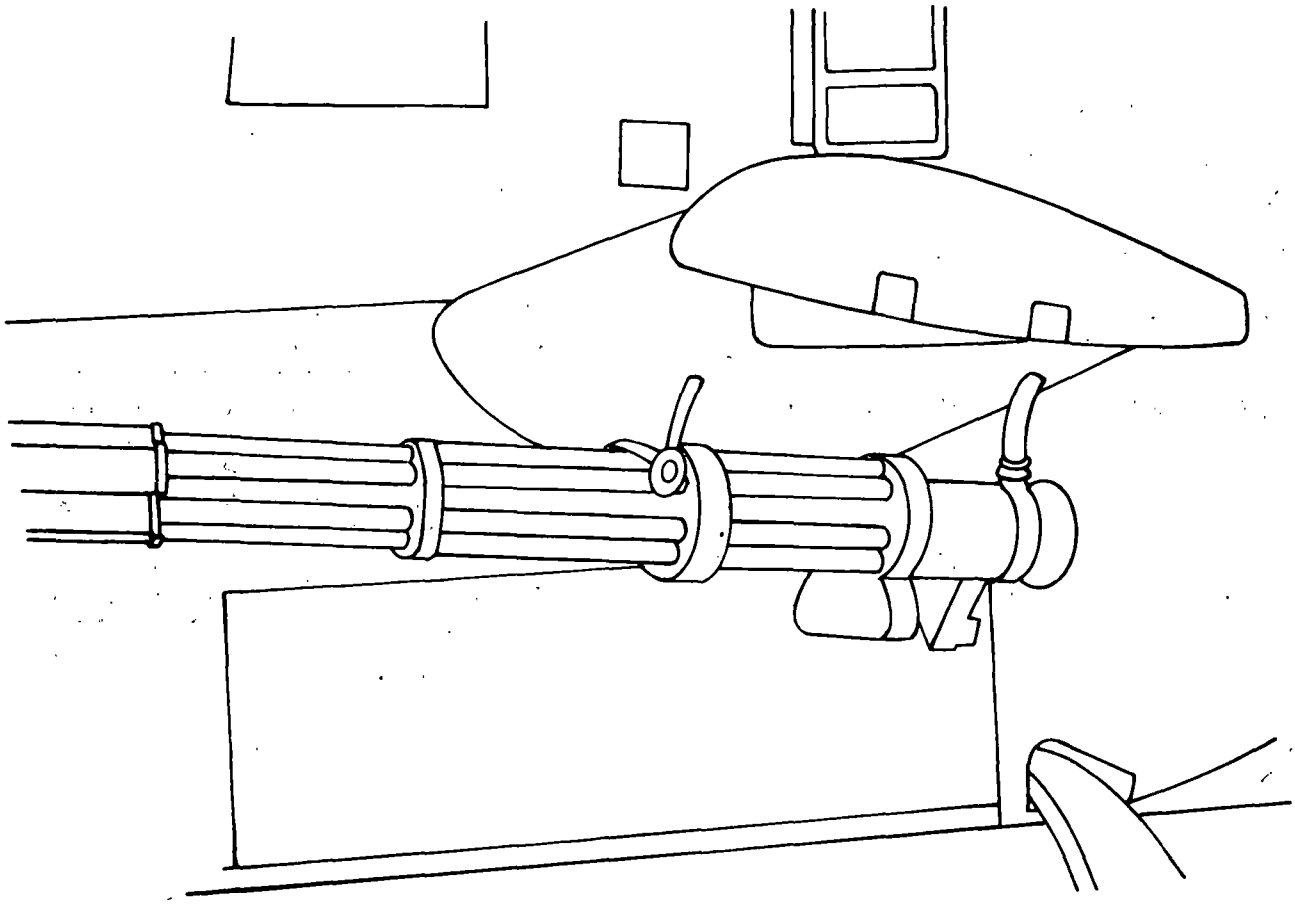


Figure 2-13. M35 Armament Subsystem

2-14. M35 Armament Subsystem.

ARMAMENT SUBSYSTEM: M35
APPLICABLE AIRCRAFT – TYPE, MODEL, SERIES: AH–1G
AVERAGE PROCUREMENT PRICE: $44,865
TYPE CLASSIFICATION: Standard
LOGISTIC CONTROL CODE: B

NOMENCLATURE: Armament subsystem helicopter, M35

DESCRIPTION: The M35 Subsystem has a 20mm Gatling type gun mounted on the inboard station of the left hand wing. The gun is basically a modified M61A1 gun with shorter barrels and a declutching feeder. It is designated the 20mm automatic gun, M195. It automatically clears itself of all live rounds at the end of each burst without dumping live rounds overboard. The gun is a fixed mount and is pilot controlled. Controls are provided for the co-pilot/gunner to fire the weapon, if necessary. Two ammunition cans (one on either side) are faired into the fuselage at the base of the stub wings.

CHARACTERISTICS:

EFFECTIVE RANGE:		3000 meters	
ELEVATION:		Attitude of aircraft	
MUZZLE VELOCITY:		3380 FPS	
RATE OF FIRE:		650-850 SPM	
TRAVERSE:		Attitude of aircraft	
EMPTY WT:	555 lbs (approx)	LOADED WT:	1187 lbs (approx)
AMMUNITION:			
CAPACITY:		950 rds	
TYPE:		Linked 20mm – M56 HEI and XM220 TPT	
SIGHTING:		M73 reflex type	

MAINTENANCE AND SUPPLY:

Maintenance	Organizational	Direct, General, and Depot Support
Instruction:	TM 9-1005-299-12	TM 9-1005-299-34
Repair parts:	TM 9-1005-299-20P	-35P*
Special tools:	TM 9-1005-299-20P	-34 and -35P*
Shop sets:	Not Applicable	

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENT
A	1560-00-246-4744	MWO 55-1520-221-40/4	B17	COBRA Project
C	1005-00-133-8193	TM 9-1005-299-12	B14	Manager (DRCPM-CO)

Operational instructions are contained in TM 55-1520-221-10.
*To be published as a -34P

2-15. M28A1 Armament Subsystem.

ARMAMENT SUBSYSTEM: M28A1
APPLICABLE AIRCRAFT – TYPE, MODEL, SERIES: AH-1G
AVERAGE PROCUREMENT PRICE: $95,067
TYPE CLASSIFICATION: Standard
LOGISTIC CONTROL CODE: A

NOMENCLATURE: Armament subsystem, helicopter, 7.62mm machine gun, 40mm grenade launcher.

DESCRIPTION: The M28A1 armament subsystem is an electrically controlled, hydraulically operated, dual weapon that provides wide angle coverage and rapid fire for the AH-1G Hueycobra. The M28A1 armament subsystem consists of a power operated chin turret, mounting the 7.62 mm machine gun M134 on the right and the 40mm grenade launcher M129, on the left. Ammunition is stored in the ammunition bay and moved to the turret through fixed and flexible chuting. Fire control equipment is located at the gunner/co-pilot station and allows the gunner to train the weapons in azimuth and elevation. Provisions are made for the pilot to fire the weapons in the stow position. The system provides the AH-1G Hueycobra with area and point fire for attack on personnel and lightly armored and unarmored materiel targets during escort and armed reconnaissance missions.

CHARACTERISTICS:

MAXIMUM EFFECTIVE RANGE:	7.62mm 1500 meters;40mm 1500 meters
ELEVATION/DEPRESSION:	Variable elevator traverse, +12° to +17.5° and depression −50°.
MUZZLE VELOCITY:	Machine gun 2750 FPS 40mm Grenade launcher 790 FPS
RATE OF FIRE:	7.62mm - 2000 or 4000 SPM, 40mm - 420 SPM
TRAVERSE:	114° left and right of longitudinal axis of AH-1G
EMPTY WT: 7.62mm and 40mm 447 lbs	LOADED WT: 897 lbs
AMMUNITION:	
CAPACITY:	Maximum 4000 rds for M134,300 rds for M129.
TYPE:	Linked 7.62mm and 40mm.
SIGHTING:	Pilots reflex sight M73, lighted reticle and manual range adjustment. Gunner sight is a flexible reflex sight with automatic air speed compensation.

2-15. M28A1 Armament Subsystem (Con't).

MAINTENANCE AND SUPPLY:

Maintenance	AVUM	Avim and Depot
Instruction:	TM 9-1090-203-12;	-34
Repair parts:	TM 9-1090-203-20P;	-34P
Special tools:	TM 9-1090-203-12 and 20P;	-34 and -34P
Shop sets:	Not Applicable	DMWR 9-1090-202-2 DMWR 9-1090-203-1

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENTS
	1090-00-134-3071	TM 9-1090-203-12	B14	DA Controlled

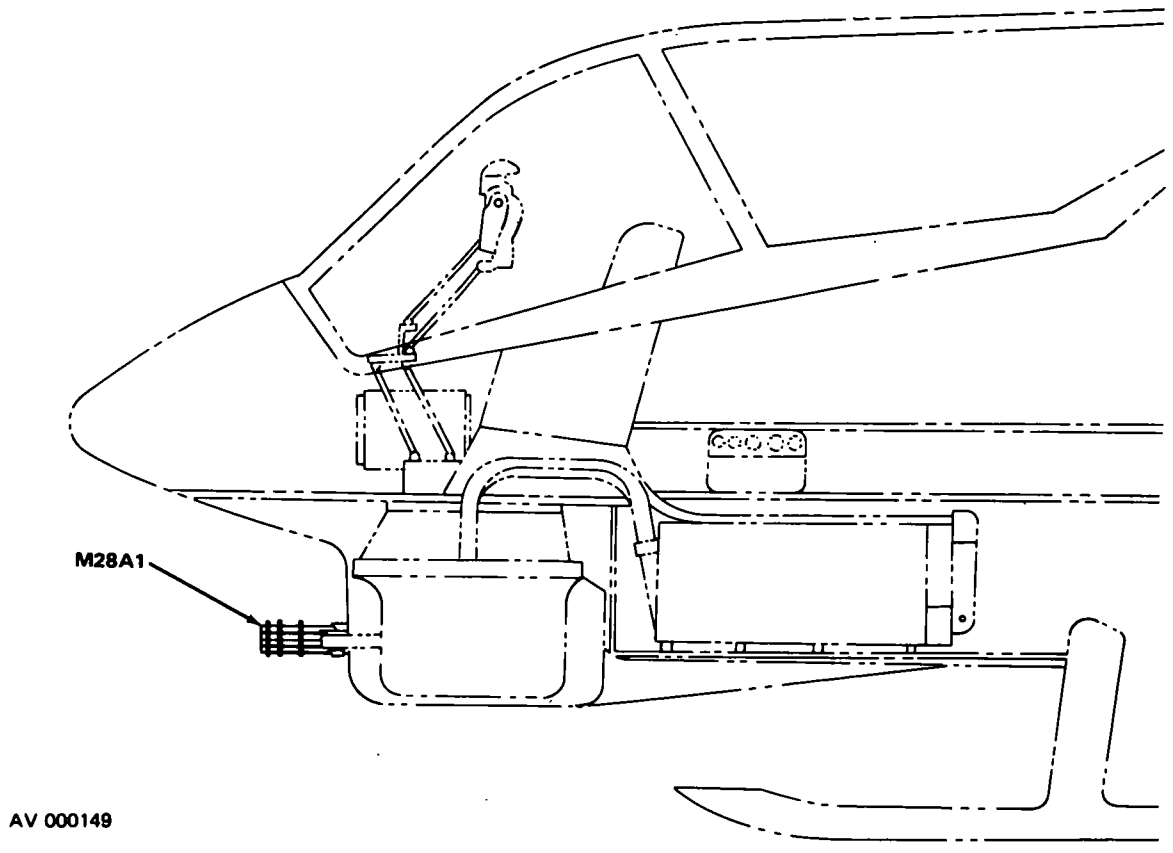


Figure 2-14. M28A1 Armament Subsystem

2-16. M28A2 Armament Subsystem.

ARMAMENT SUBSYSTEM: M28A2
APPLICABLE AIRCRAFT – TYPE, MODEL, SERIES: AH-1S (MOD)
AVERAGE PROCUREMENT PRICE: $183,567
TYPE CLASSIFICATION: Standard

NOMENCLATURE: Armament subsystem, helicopter, 7.62mm machine gun, 40mm grenade launcher.

DESCRIPTION:

The M28A2 armament subsystem is an electrically controlled, hydraulically operated, dual weapon that provides wide angle coverage and rapid fire for the AH-1S. The M28A2 armament subsystem consists of a power operated chin turret, mounting the 7.62mm machine gun M134 and on the right and the 40mm grenade launcher M129 on the left. Ammunition is stored in the ammunition bay and moved to the turret through fixed and flexible chuting. The M28A2 is controlled in the flexible mode by either the gunner or pilot by use of the M128 helmet sight subsystem. The gunner can also direct fire by using the telescopic sight unit. The M-73 sight gives the pilot the ability to fire the turret weapons in the stowed position. The system provides the AH-1S with area and point fire for attack on personnel and lightly armored and unarmored materiel targets during escort and armed reconnaissance missions.

CHARACTERISTICS:

MAXIMUM EFFECTIVE RANGE:	7.62mm 1500 meters; 40mm 1500 meters			
ELEVATION/DEPRESSION:	+20° – 50° variable with traverse			
MUZZLE VELOCITY:	Machine gun 2750 FPS 40mm Grenade launcher 790 FPS			
RATE OF FIRE:	7.62mm - 2000 or 4000 SPM, 40mm - 420 SPM			
TRAVERSE:	110° left and right of longitudinal axis			
EMPTY WT:	7.62mm and 40mm	447 lbs	LOADED WT:	897 lbs
AMMUNITION:				
CAPACITY:	Maximum 4000 rds for each M 134, 300 rds for each M129.			
TYPE:	Linked 7.62mm and 40mm.			
SIGHTING:	**M128 helmet sight subsystem** **M73 reflex sight** **M65TOW missile subsystem**			

2-16. M28A2 Armament Subsystem (Con't).

MAINTENANCE AND SUPPLY:

Maintenance	AVUM	AVIM and Depot
Instruction:	TM 9-1090-203-12-1	-34-1
Repair parts:	TM 9-1090-203-20P-1	-34P-1
Special tools:	TM 9-1090-203-12-1 and 20P-1	
Shop sets:	Not Applicable	Not Applicable

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENTS
–	1090-00-081-1046	TM 9-1090-203-12-1	B14	DA Controlled

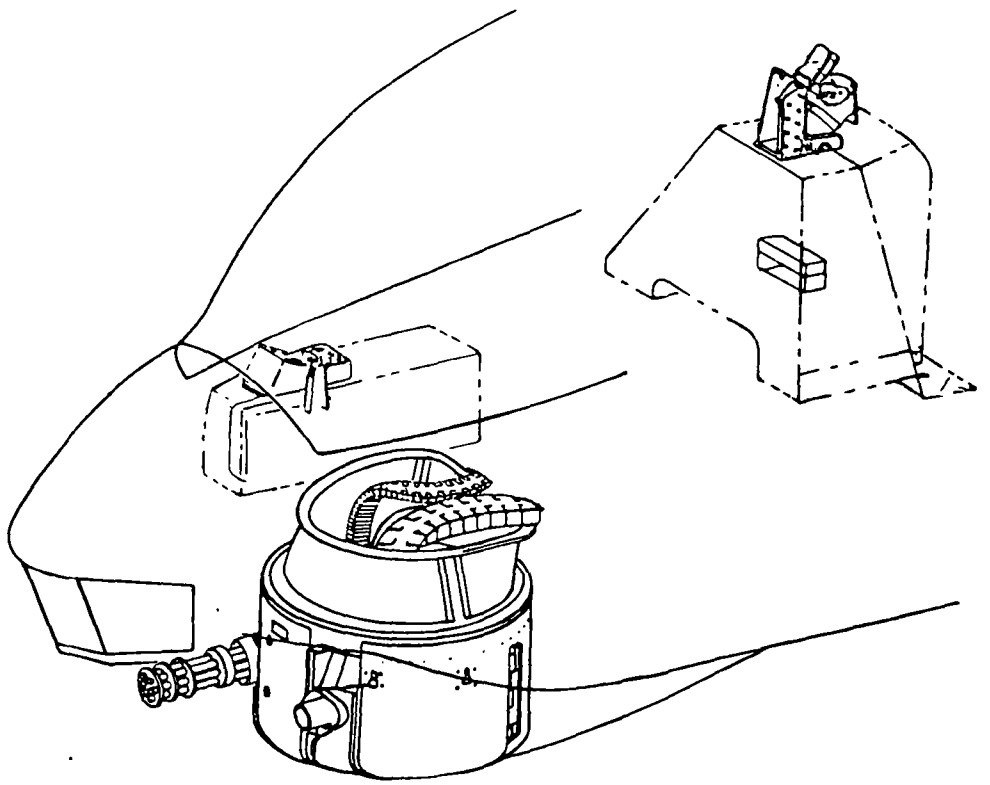


Figure 2-15. M28A2 Armament Subsystem

2-17. M28A3 Armament Subsystem.

ARMAMENT SUBSYSTEM: M28A3
APPLICABLE AIRCRAFT – TYPE, MODEL, SERIES: AH-1S (new production)
AVERAGE PROCUREMENT PRICE: $183,567
TYPE CLASSIFICATION: Standard

NOMENCLATURE: Armament subsystem, helicopter, 7.62mm machine gun, 40mm grenade launcher.

DESCRIPTION: The M28A3 armament subsystem is an electrically controlled, hydraulically operated, dual weapon that provides wide angle coverage and rapid fire for the AH-1S. The M28A3 armament subsystem consists of a power operated chin turret, mounting the 7.62mm machine gun M134 and on the right and the 40mm grenade launcher M129 on the left. Ammunition is stored in the ammunition bay and moved to the turret through fixed and flexible chuting. The M28A3 is controlled in the flexible mode by either the gunner or pilot by use of the M136 helmet sight subsystem. The gunner can also direct fire by using the telescopic sight unit. The M-73 sight gives the pilot the ability to fire the turret weapons in the stowed position. The system provides the AH-1S with area and point fire for attack on personnel and lightly armored and unarmored materiel targets during escort and armed reconnaissance missions.

CHARACTERISTICS:

MAXIMUM EFFECTIVE RANGE:	7.62mm 1500 meters; 40mm 1500 meters			
ELEVATION/DEPRESSION:	+20° — 50° variable with traverse			
MUZZLE VELOCITY:	Machine gun 2750 EPS 40mm Grenade launcher 790 FPS			
RATE OF FIRE:	7.62mm - 2000 or 4000 SPM, 40mm - 420 SPM			
TRAVERSE:	110° left and right of longitudinal axis			
EMPTY WT:	7.62mm and 40mm	447 lbs	LOADED WT:	897 lbs
AMMUNITION:				
CAPACITY:	Maximum 4000 rds for each M134, 300 rds for each M129			
TYPE:	Linked 7.62mm and 40mm			
SIGHTING:	M128 helmet sight subsystem M73 reflex sight M65TOW misxsile subsystem			

DIFFERENCES:

The M28A3 Subsystem features edge lighting on the pilots and gunners control panel.

2-17. M28A3 Armament Subsystem (Con't).

MAINTENANCE AND SUPPLY:

Maintenance	AVUM	AVIM and Depot
Instruction:	TM 9-1090-203-12-2	-34-1, 34-2
Repair parts:	TM 9-1090-203-20P-1/-2	-34-1, 34P-2
Special tools:	TM 9-1090-203-12-2, -20P-1 and -20P-2	
Shop sets:	Not Applicable	Not Applicable

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENTS
—	1090-01-030-0095	TM 9-1090-203-1 2-2	B14	DA Controlled

Illustration to be furnished next revision.

Figure 2-16. M28A3 Armament subsystem

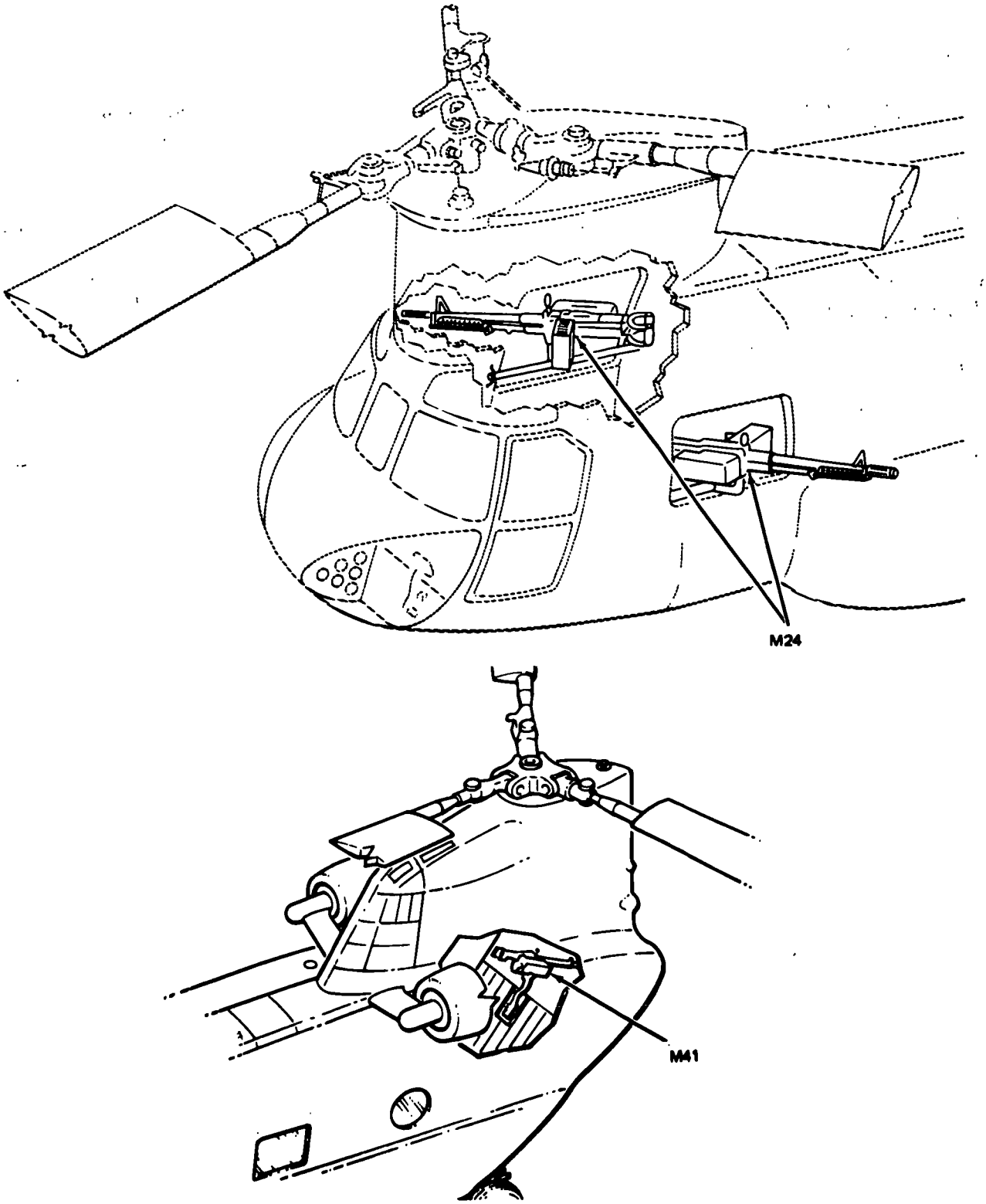


Figure 2-17. M24 and M41 Armament Subsystems Installed on CH-47 (Chinook) Helicopter

2-18. M24 Armament Subsystem.

ARMAMENT SUBSYSTEM: M24
APPLICABLE AIRCRAFT – TYPE, MODEL, SERIES: CH-47A
AVERAGE PROCUREMENT PRICE: $3722
TYPE CLASSIFICATION: Standard
LOGISTIC CONTROL CODE: A

NOMENCLATURE: Armament subsystem, helicopter, door pintle mounted 7.62mm M60D machine gun

DESCRIPTION: The subsystem consists of two machine guns, M60D, and two mounts, one mount on each side of the aircraft. The subsystem mount assemblies are located in the cabin doorway and forward escape hatch of the CH-47 type helicopter. The subsystem contains mechanical safeties and stops to preclude accidental damage to the aircraft due to inadvertent firing of the guns into the airframe. The mount assemblies are designed so that the left and right cams and stops cannot be installed and used incorrectly on the opposite side of the aircraft. The machine gun with bipod has the capability of being quickly removed from the mount and used as a ground weapon. A link and brass ejection control bag is attached to the right side of each machine gun to prevent the cartridge cases and links from being ejected into the paths of the rotor blades or turbine engine intake.

CHARACTERISTICS:

MAXIMUM EFFECTIVE RANGE:	1100 meters		
ELEVATION:	Forward +3°, Aft +6.5°, Depression 78° right side, 67° left side		
MUZZLE VELOCITY:	2750 FPS		
RATE OF FIRE:	550 SPM		
TRAVERSE:	Left gun 71° fwd, 59° aft; right gun 74° fwd, 61° aft		
EMPTY WT:	97 lbs	LOADED WT:	123 lbs
AMMUNITION:			
CAPACITY:	200 rds per side		
TYPE:	Linked 7.62mm		
SIGHTING:	Ring and post type		

MAINTENANCE AND SUPPLY:

Maintenance	AVUM AVIM and Depot
Instructions	TM 9-1005-262-14
Repair parts:	TM 9-1005-262-24P
Special tools:	TM 9-1005-262-24P
Shop sets:	Not Applicable

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

None required

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENTS
-	1005-00-763-1404	TM 9-1005-262-15	B14	DA Controlled

Operational instructions for subsystem can be found in TM 9-1005-262-15.

2-19. M41 Armament Subsystem.

ARMAMENT SUBSYSTEM: M41
APPLICABLE AIRCRAFT – TYPE, MODEL, SERIES: CH–47A/B/C
AVERAGE PROCUREMENT PRICE: $2,205
TYPE CLASSIFICATION: Standard
LOGISTIC CONTROL CODE: A

NOMENCLATURE: Armament subsystem, helicopter, 7.62mm machine gun M60D, ramp mounted, light weight.

DESCRIPTION: The M41 armament subsystem consists of a pintle mount, machine gun M60D, link and brass retainer, ammo box, and gunner's safety harness. The machine gun M60D, is utilized with positive mechanical stops to limit weapon attitude.

CHARACTERISTICS:

MAXIMUM EFFECTIVE RANGE:	1100 meters
ELEVATION/DEPRESSION:	+12.5°, -69°
MUZZLE VELOCITY:	2750 FPS
RATE OF FIRE:	550 SPM cyclic rate
TRAVERSE:	52° right or left
WEIGHT:	41 lbs empty, 55 lbs loaded
AMMUNITION:	
CAPACITY:	200 rds
TYPE:	Linked 7.62mm
SIGHTING:	Aircraft ring and post type

MAINTENANCE AND SUPPLY:

Maintenance	AVUM AVUM
Instruction:	TM 9-1005-262-14
Repair parts:	TM 9-1005-262-24P
Special tools:	TM 9-1005-262-24P
Shop sets:	Not Applicable

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENT
C	1005-00-087-2046	TM 9-1005-262-24P	B14	DA Allocated

Operating instructions are contained in TM 9-1005-262-15.

Figure 2-18. M56 Mine Dispenser

2-20. M56 Aircraft Mine Dispersing Subsystem.

ARMAMENT SUBSYSTEM: M56
APPLICABLE AIRCRAFT TYPE, MODEL, SERIES: UH:1H
AVERAGE PROCUREMENT PRICE: $10,640
TYPE CLASSIFICATION: Standard
LOGISTIC CONTROL CODE: A

NOMENCLATURE: Mine dispersing subsystem, aircraft

DESCRIPTION: The M56 is a helicopter mine dispersing subsystem consisting of a US Air Force SUU-13 dispenser containing 40 mine canisters. Each canister contains two antitank mines and one XM198 mine ejection charge. A battery is installed in each mine just prior to flight. Firing of the subsystem is controlled by the aircraft crew. Quantity and interval of mine canister firing is controlled from the cockpit. The mines will arm only after both ejection and impact. The minimum altitude for dispensing is 100 feet.

CHARACTERISTICS:

LENGTH:	90.4 inches
DIAMETER:	14.5 inches
EMPTY WEIGHT:	117 lbs
LOADED WEIGHT:	660 lbs
CAPACITY:	40 mines
SIGHTING:	None

MAINTENANCE AND SUPPLY:

Maintenance Instruction:	Direct Support TM 9-1345-201-30
Repair parts:	TM 9-1345-201-30
Special tools:	TM 9-1345-201-30
Shop sets	Not Applicable

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

Operational instructions contained in TM 9-1345-201-10-1

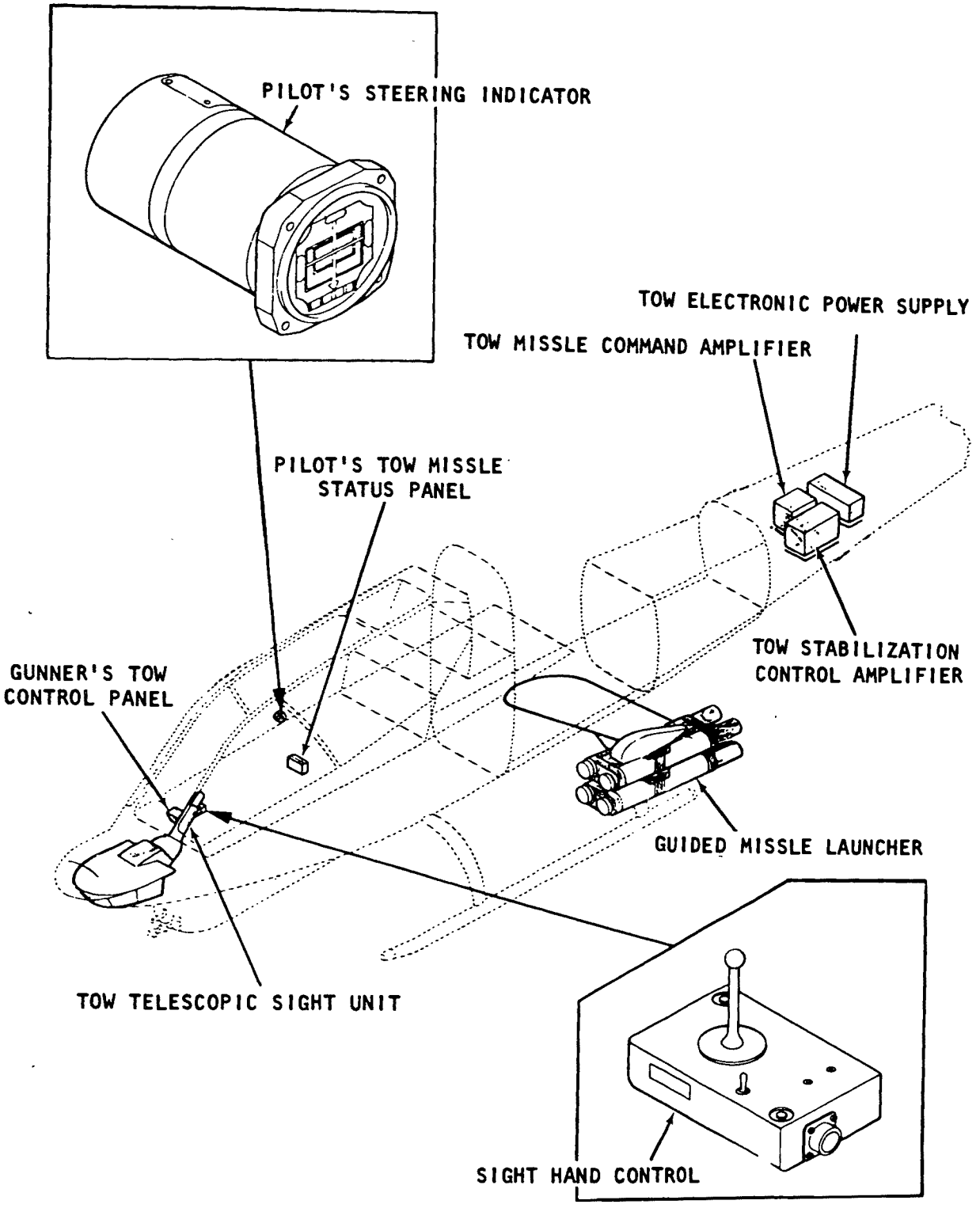


Figure 2-19. M65 Armament Subsystem (Typical) AH-1S(MOD)

2-21. M65 Armament Subsystem.

ARMAMENT SUBSYSTEM: M65
APPLICABLE AIRCRAFT — TYPE, MODEL, SERIES: AH-1S (MOD), AH-1S
AVERAGE PROCUREMENT PRICE W/LATT: $795,400
TYPE CLASSIFICATION: Standard
LOGISTIC CONTROL CODE: A

NOMENCLATURE: Armament Subsystem, Helicopter, TOW Guided Missile: M65

DESCRIPTION: The M65 Armament Subsystem utilizes optical and infrared means of tracking and guiding the TOW missile to the target. Items that make up the system include the Telescopic Sight Unit, Stabilization Control Amplifier, Electronic Power Supply, Missile Command Amplifier, Pilot Steering Indicator, TOW Missile Launcher, TOW Control Panel, Sight Hand Control, and Missile Status Panel. Isolation from aircraft motions and vibrations is provided by platform stabilization and motion compensation electronics, thus enabling a high first-hit probability.

CHARACTERISTICS:

Maximum Effective Range:	3750 Meters
Elevation/Depression:	$+30^{\circ}$ to -60° (TSU)
Maximum Missile Velocity:	300 Meters per Second
Rate of Fire:	As selected by pilot gunner
Traverse:	$+110^{\circ}$ Angular Coverage in Azimuth (TSU)
Empty Weight: 241 lbs.	Loaded Weight: 893 lbs.
Missile Capacity:	8 Missiles (4 each side)
Ammo Type:	BGM-71A-1 (ext. range)
Sighting:	M128 Helmet Sight Subsystem Telescopic Sight Unit
Data:	Complete Outboard Stores are jettisonable.

2-21. M65 Armament Subsystem (Con't).

MAINTENANCE AND SUPPLY:

Maintenance Instructions:	AVUM, AVIM and Depot TM 9-1425-473-20 TM 9-1425-473-34 TM 9-4935-473-14-1 TM 9-4935-473-14-2
Repair Parts:	TM 9-1425-473-24P TM 9-4935-473-34P

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS AND OPERATION INSTRUCTIONS: .

Operational instructions contained in:
TM 55-1520-234-10 and TM 55-1520-236-10

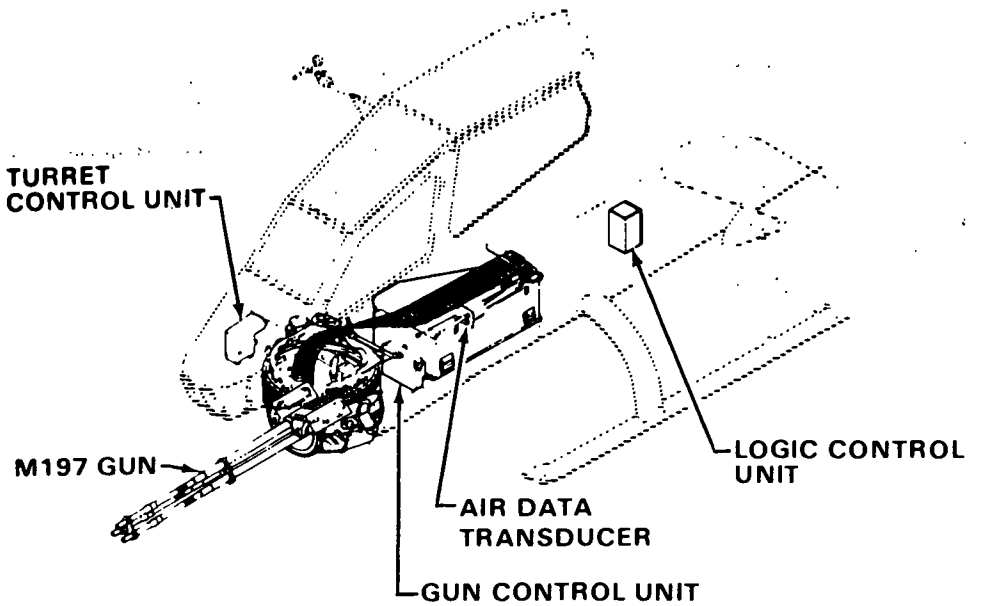


Figure 2-20. Armament Subsystem, XM97E1

2-22. XM97E1 Armament Subsystem.

ARMAMENT SUBSYSTEM: XM97E1
APPLICABLE AIRCRAFT — TYPE, MODEL, SERIES: AH-1A(ECAS)
AVERAGE PROCUREMENT PRICE: $200,000.00
TYPE OF CLASSIFICATION:

NOMENCLATURE: ARMAMENT SUBSYSTEM HELICOPTER; 20mm AUTOMATIC GUN: XM97E1

DESCRIPTION: The XM97E1 Armament Subsystem is chin mounted on the AH-1S Aircraft and provides high performance Armament. The major components of the system are the Declutching Feeder, M89E1, 20mm Automatic Gun M197, Turret,, Gunner Control Panel, Pilot Control Panel, Interface Control Unit, Reflex Sight and Pressure Transducer.

CHARACTERISTICS:

Capacity (ammunition 20mm)	750 rounds
Rate of Fire	730 ± 50 SPM
Effective Range	4770 yds.

System Weight:

Loaded	1000 lbs.
Empty	416 lbs.

MAINTENANCE AND SUPPLY:

Maintenance	AVUM and AVIM Support
Instruction:	TM 9-1090-206-12
Repair Parts:	TM 9-1090-206-20P
Instruction:	TM 9-1090-206-30
Repair Parts:	TM 9-1090-206-30P
Shp Sets:	SC 4931-95-CL A21
	SC 4933-95-CL A21

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

Not Applicable

2-23. M97E2 Armament Subsystem.

ARMAMENT SUBSYSTEM: M97E2
APPLICABLE AIRCRAFT - TYPE, MODEL, SERIES: AH-1S (MODERNIZED)
AVERAGE PROCUREMENT PRICE: Not Available
TYPE OF CLASSIFICATION: Standard

NOMENCLATURE: ARMAMENT SUBSYSTEM, HELICOPTER; 20mm AUTOMATIC GUN.

DESCRIPTION: The XM97E2 Armament Subsystem is an improvement of the XM97E1 with the addition of the following highly sophisticated subsystems: Head Up Display (HUD), Rocket Management System (RMS), Air Data System (ADS), and the Fire Control Computer (FCC). Used in total, these subsystems provide an accurate target pinpointing weapon system.

CHARACTERISTICS:

Capacity (ammunition 20mm)	750 rounds
Rate of Fire	730 ± 50 SPM High Rate, 16 ± 4 SPM Low Rate
Effective Range	4770 yds.
System Weight:	
Loaded	950 lbs.
Empty	528 lbs.

MAINTENANCE AND SUPPLY:

Maintenance	AVUM and AVIM Support
Instruction:	TM 9-1090-206-12
Repair Parts:	TM 9-1090-206-20P
Instruction:	TM 9-1090-206-30
Repair Parts:	TM 9-1090-206-30P
Shop Sets:	SC 4931-95-CL-A21
	SC 4933-95-CL-A21

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS AND OPERATING INSTRUCTIONS:

Not Applicable

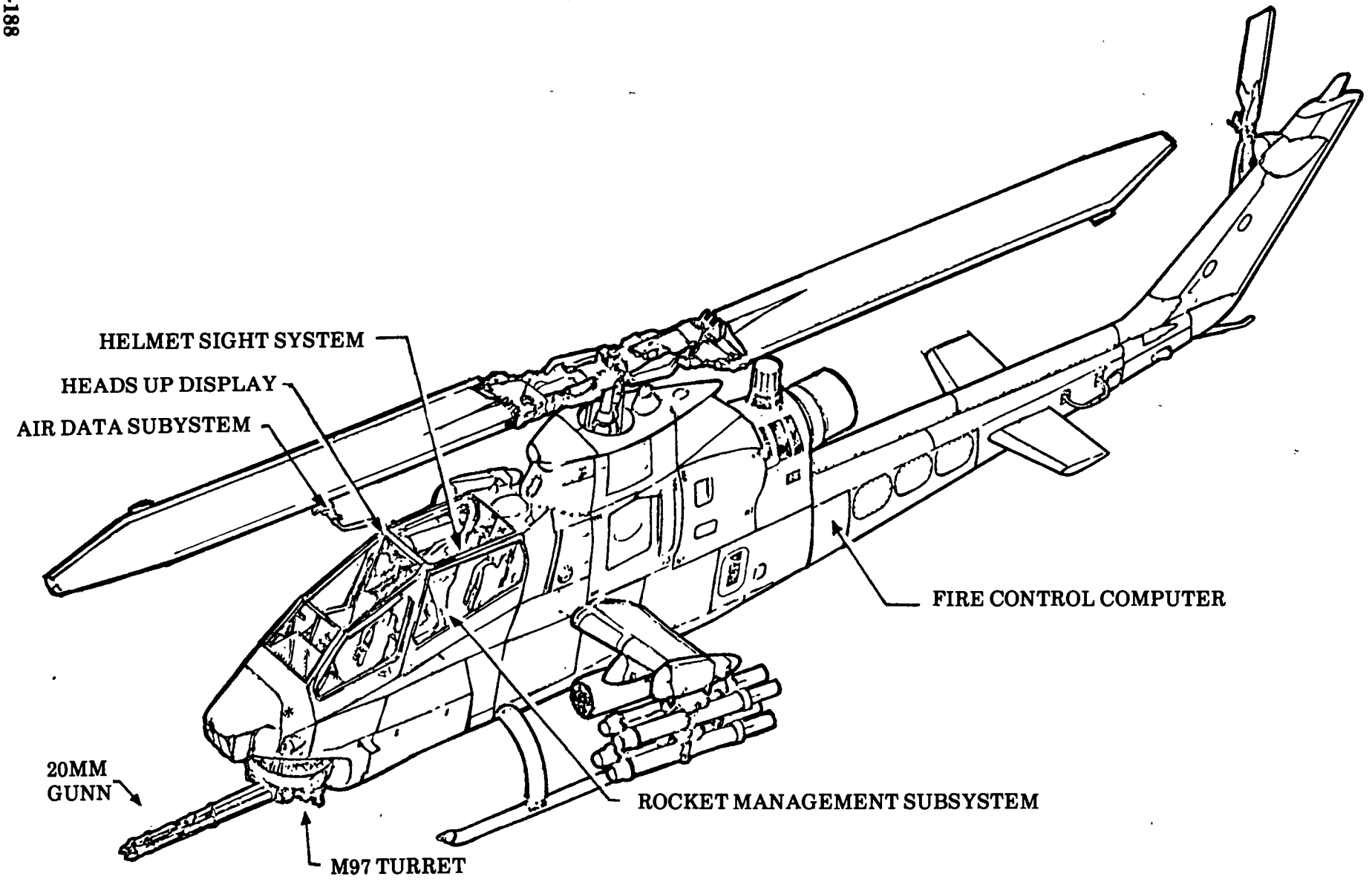
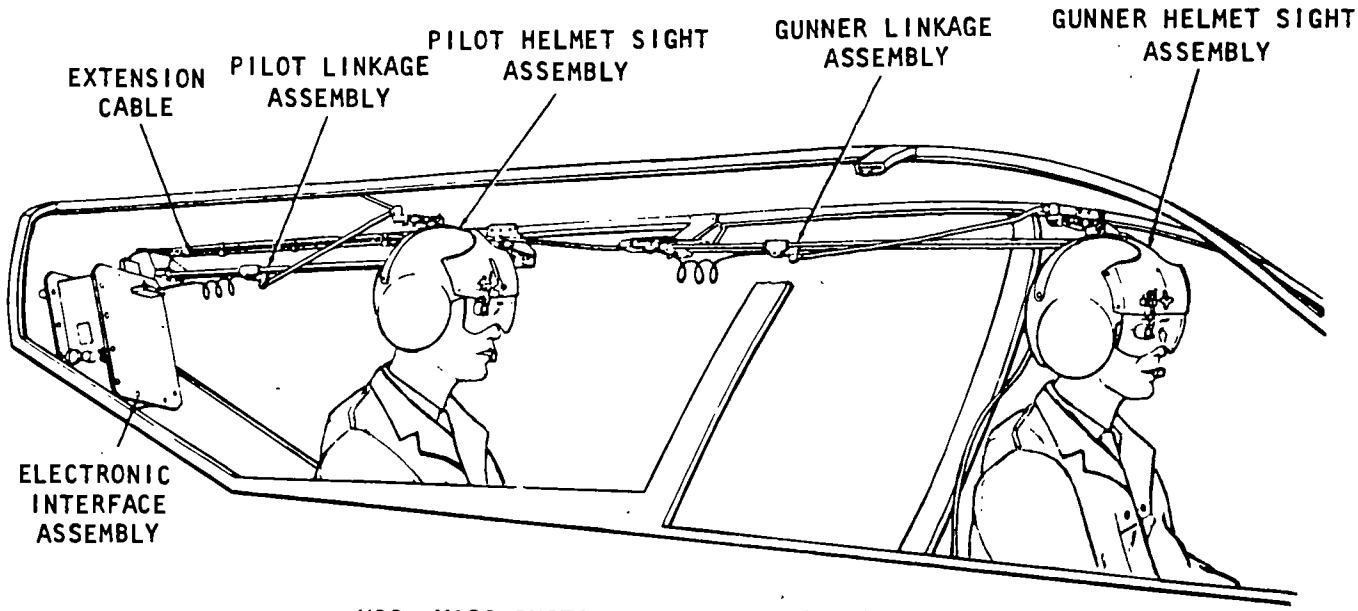
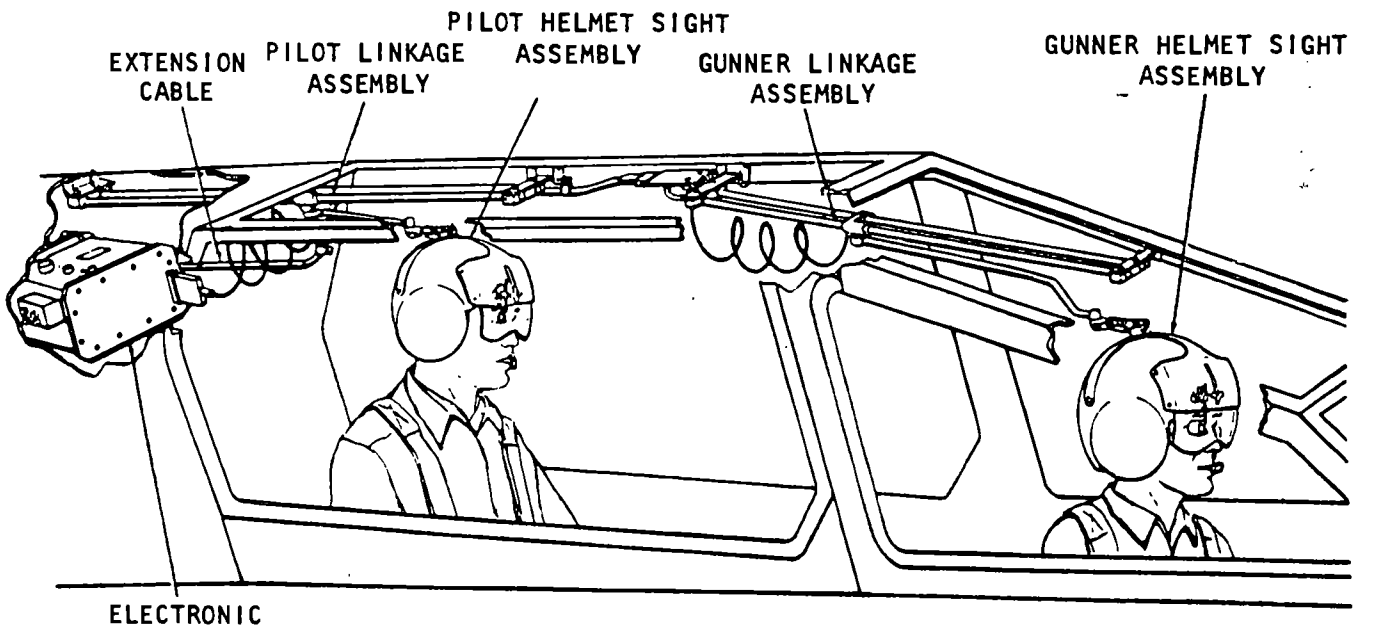


Figure 2-21. XM97E2 Subsystem



HSS M128 INSTALLED IN AH-1S(MOD)



HSS M136 INSTALLED IN AH-1S (TYPICAL)

Figure 2-22. Helmet Sight Subsystem (HSS) AH-1 Installation

2-24. Helmet Sight Subsystem (HSS).

There are two models of the HSS, M128 used in AH-1S (MOD) and M136 subsystem used in the AH-1S.

HELMET SIGHT SUBSYSTEM:	M128	M136
APPLICABLE AIRCRAFT:	AH-1S (MOD)	AH-1S (New PROD/ECAS)
TYPE CLASSIFICATION:	Standard	

NOMENCLATURE: Fire control subsystem, helmet-directed: M128 or M136

DESCRIPTION: The HSS is a helmet-directed sighting subsystem that interfaces with the gun turret and the telescope sight unit (TSU) of the M65 TOW missile subsystem in the AH-1S (MOD) and AH-1S helicopters. The HSS operates from power supplied by the helicopter and consists of the following assemblies:

Helmet sight (2)

Pilot linkage

Gunner linkage

Electronic interface assembly

Extension cable

The HSS enables the helicopter pilot and copilot/gunner (hereinafter referred to as gunner) to rapidly acquire visible targets and to direct either the gun turret or the TSU to those targets. The helmet-mounted optical sight extends over the operator's right eye, and an illuminated reticle pattern is projected into the optical sight. Electromechanical linkage sense the helmet position and generate sight-line signals, which are processed by the electronic interface assembly (EIA) and used to control the angular position of the turret or the TSU.

Either operator can command the gun turret or TSU by means of operator-selectable cockpit switches. When necessary, the gun turret and TSU can be commanded simultaneously by the pilot and gunner, respectively.

2-24. Helmet Sight Subsystem (HSS) (Con't).

Differences between the two models of the HSS, M128 used in the AH-1S (MOD) and M136. All of the differences, mechanical and electrical between the two models result from differences in HSS installation in the helicopters with the flat plate canopy. The only major item that differs between the two models is the EIA. The helmet sight assemblies, pilot and gunner linkage assemblies, and extension cable are identical and interchangeable between models.

MAINTENANCE AND SUPPLY:

PUBLICATIONS:	ORG/DS/GS
Operation Maintenance:	TM 9-1270-212-14&P
	TM 9-1270-220-13&P

MODIFICATION DATA:

Not Applicable

2-25. XM138, Rocket Management System.

ROCKET MANAGMENT SUBSYSTEM: XM138
APPLICABLE AIRCRAFT - TYPE, MODEL, SERIES: AH-1S (ECAS) and Modernized
AVERAGE PROCUREMENT PRICE: $50,000.00
TYPE CLASSIFICATION: Standard

NOMENCLATURE: Rocket Management Subsystem, Inventory - Deployment: XM138

DESCRIPTION: The Rocket Management Subsystem (RMS) is a pilot operated subsystem that interfaces with the wing stores. It is composed of a cockpit display unit and four identical wing mounted operations units. It enables the pilot to select and monitor the desired warhead/fuze combination for up to five loading zones from either two or four 7 or 19 tube launchers.

MAINTENANCE AND SUPPLY:

The display unit and the operation units are line replaceable units. At AVIM, the LRU's are checked out with the Rocket Management Subsystem Test Set and are repaired down to the SRU level.

PUBLICATION: Operation and Maintenance TM 9-1090-207-13 and P

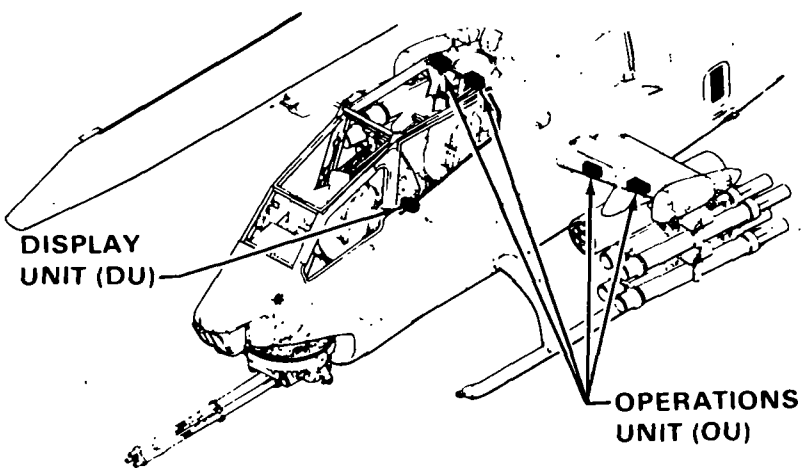


Figure 2-23. Rocket Management System, XM138

2-26. XM76 Head Up Display Subsystem.

ARMAMENT SUBSYSTEM: XM76
APPLICABLE AIRCRAFT - TYPE, MODEL, SERIES: AH-1S (MODERNIZED)
AVERAGE PROCUREMENT PRICE: Not Available
TYPE OF CLASSIFICATION: Standard

NOMENCLATURE: ARMAMENT SUBSYSTEM, HEAD UP DISPLAY: XM76.

DESCRIPTION: The primary use of the (HUD) is for aiming the aircraft to fire rockets, forward gun, and to assist the copilot/gunner in operating the TOW missile system. The secondary use of the HUD is for display of the engine torque, radar altitude, magnetic reading, and range for flight safety purposes when the pilot is flying head-up with eyes focused outside the cockpit. The components of the HUD are the Head up Display, Signal Processor, and HUD Boresightable Mount.

CHARACTERISTICS:

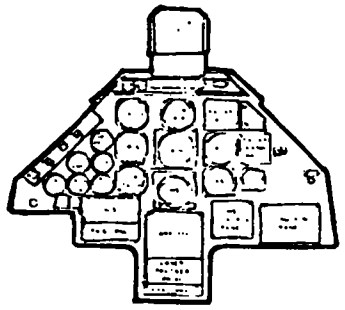
Capacity (ammunition)	Not Applicable
Rate of Fire	Not Applicable
Effective Range	Not Applicable.
System Weight:	100 lbs.

MAINTENANCE AND SUPPLY:

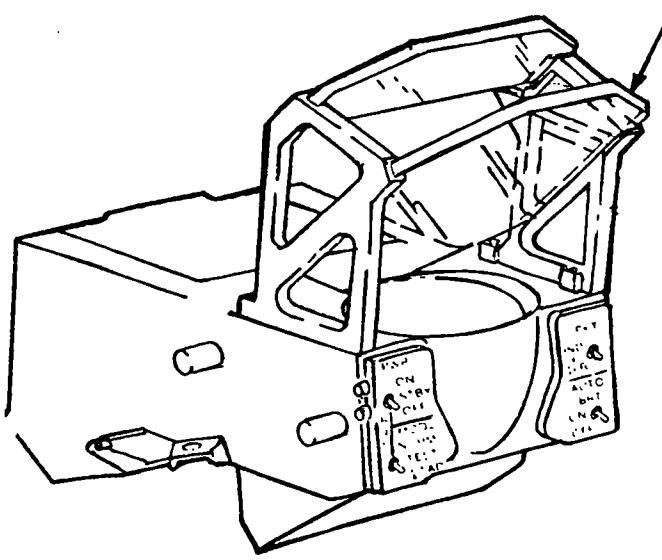
Operation and Maintenance: TM 9-1270-220-13&P

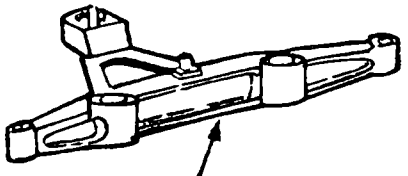
MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS AND OPERATING INSTRUCTIONS:

Not Applicable



AH-1S (MC) PILOTS PANEL





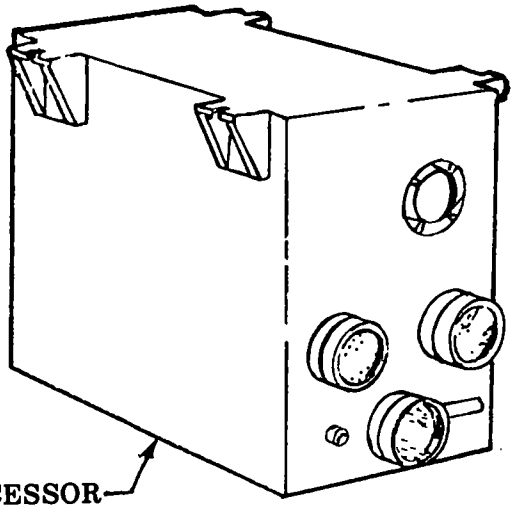


Figure 2-24. XM76 Head Up Display Subsystem

2-27. XM142 Air Data Subsystem (ADS).

ARMAMENT SUBSYSTEM: XM142
APPLICABLE AIRCRAFT - TYPE, MODEL, SERIES: AH-1S (XM97E2) MODERNIZED.
AVERAGE PROCUREMENT PRICE: Not Available
TYPE OF CLASSIFICATION: Standard

NOMENCLATURE: ARMAMENT SUBSYSTEM, AIR DATA SYSTEM

DESCRIPTION: The ADS provides accurate measurement of the air data parameters altitude, altitude rate, airspeed, sideslip angle, air temperature, and air density. Components of the ADS are the Airspeed and Direction Sensor (AADS), the Electronics Processor Unit (EPU), and Low Airspeed Indicator (LAI).

CHARACTERISTICS:

Capacity (ammunition)	Not Applicable
Rate of Fire	Not Applicable
Effective Range	Not Applicable

System Weight:

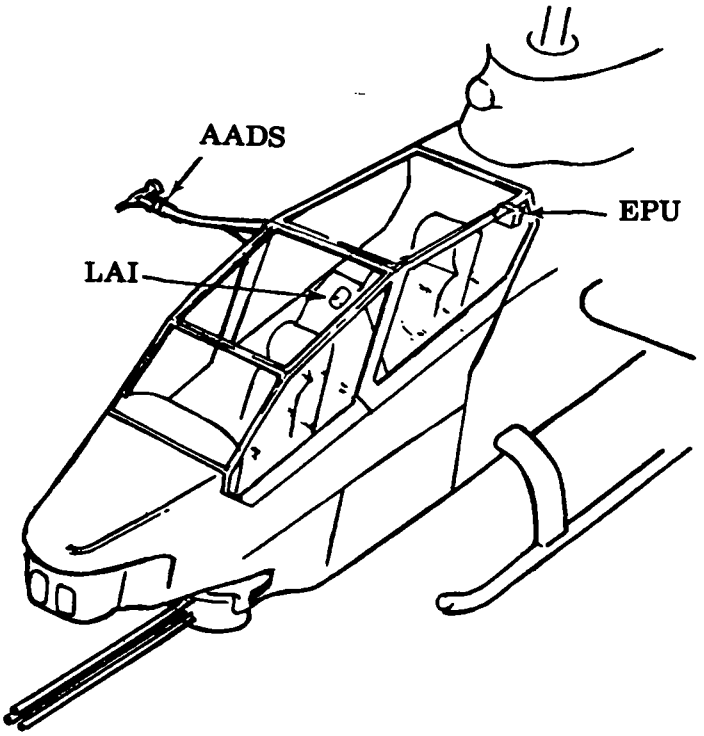
Not Available

MAINTENANCE AND SUPPLY:

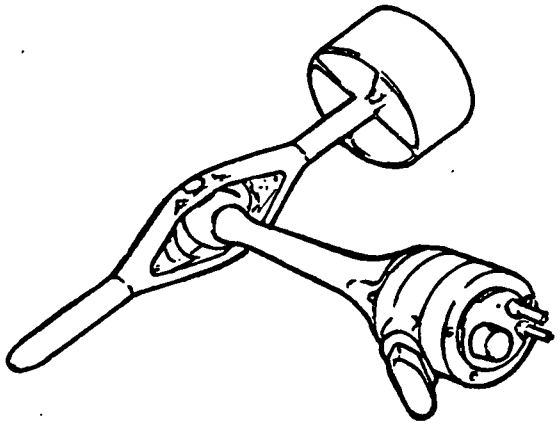
Operation and Maintenance: TM 9-4931-378-13&P

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS AND OPERATING INSTRUCTIONS:

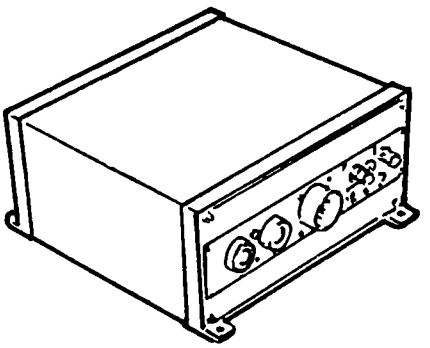
Not Applicable



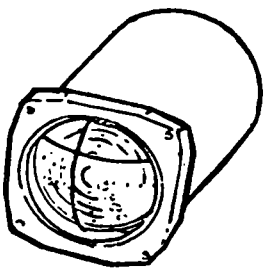
ADS, AIRCRAFT INSTALLATION



AIRSPEED AND DIRECTION SENSOR (AADS)



ELECTRONICS PROCESSOR UNIT (EPU)



LOW AIRSPEED INDICATOR (LAI)

Figure 2-25. Air Data Subsystem LRU's

2-28. XM22 Fire Control Computer (FCC).

ARMAMENT SUBSYSTEM: XM22
APPLICABLE AIRCRAFT - TYPE, MODEL, SERIES: AH-1S (MODERNIZED)
AVERAGE PROCUREMENT PRICE: Not Available
TYPE OF CLASSIFICATION: Standard

NOMENCLATURE: ARMAMENT SUBSYSTEM, FIRE CONTROL COMPUTER.

DESCRIPTION: The FCC is a general purpose software, programmable, digital processing machine. Components of the FCC are the fire control computer and a boresight memory. The FCC provides solution data derived from the integration of the heads up display, telescopic sight Unit, Helmet Sight Subsystem, M97 turret system, Rocket Management Subsystem, tow missile subsystem, Air data subsystem, Altitude Reference Gyro, Magnetic Compass Set, Radar Altimeter, torque meter and Lightweight Doppler Navigation System. This data is then used to develop electrical drive signals to position the TSU, turret, and fuse setting and to generate displays in the TSU, Head up display, and helmet sight subsystem.

CHARACTERISTICS:

Capacity (ammunition)	Not Applicable
Rate of Fire	Not Applicable
Effective Range	Not Applicable
System Weight:	25 lbs.

MAINTENANCE AND SUPPLY:

Operation and Maintenance:	TM 9-1720-218-13&P

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS AND OPERATING INSTRUCTIONS:

Not Applicable

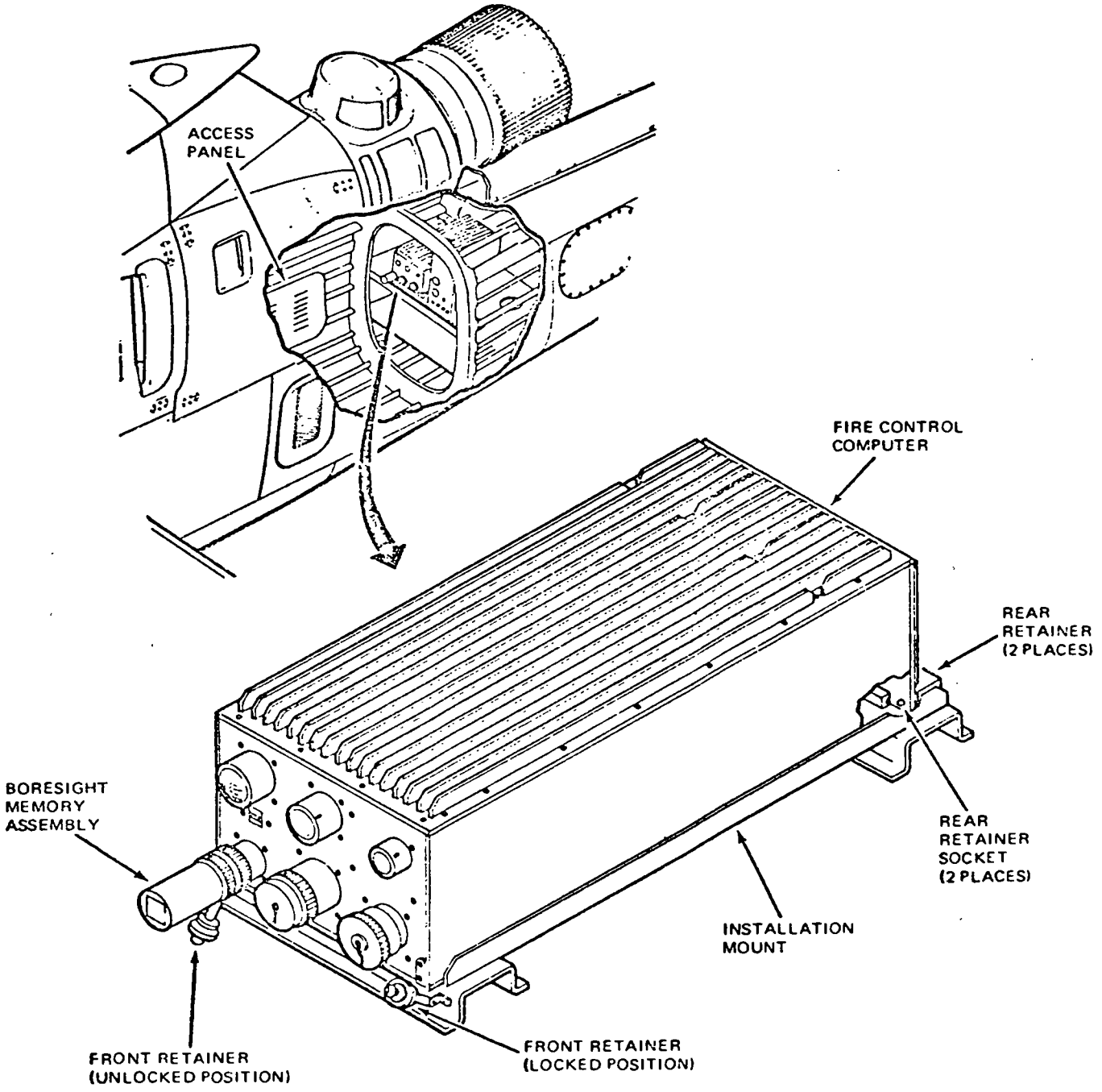


Figure 2-26. Fire Control Computer (XM22)
Aircraft Installation Diagram

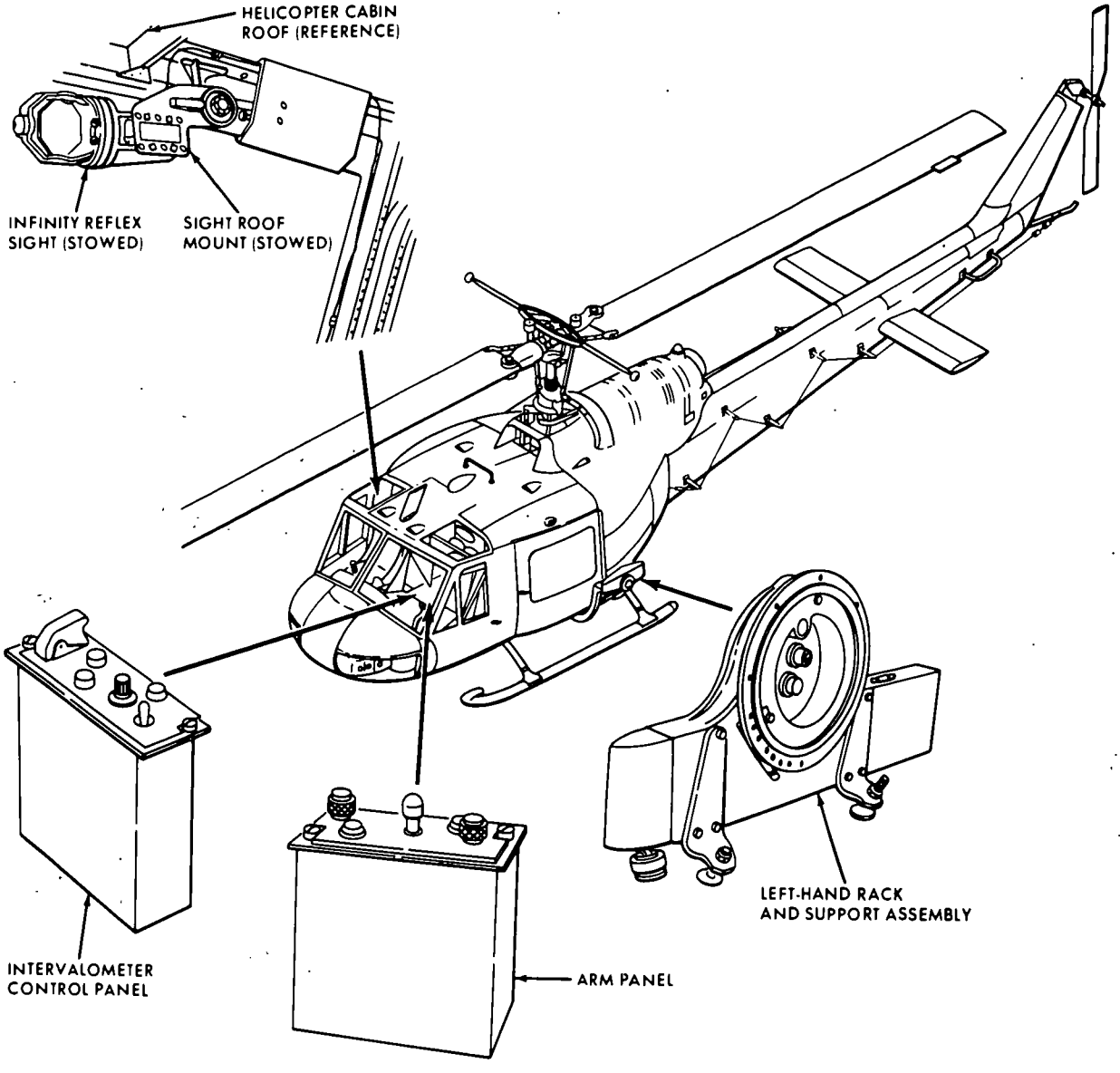


Figure 2-27. M156 Armament Subsystem Components

2-29. M156 Armament Subsystem.

ARMAMENT SUBSYSTEM: M156
APPLICABLE AIRCRAFT: UH-1B/M
AVERAGE PROCUREMENT PRICE: $10,595
TYPE CLASSIFICATION: Limited Procurement
LOGISTIC CONTROL CODE: U

NOMENCLATURE: Mount, multiarmament, helicopter

DESCRIPTION: This item consists of two separate mounts, one mount installed on each side of the UH-1 helicopter. It is capable of carrying and firing the M158A1 and M200A1 2.75 inch rocket launchers or carrying external stores suspended from 14 inch bomb racks, MA-4A. The external stores cannot exceed 540 lbs per mount. A product improvement proposal which will enable the M156 to carry a fully loaded 19 tube rocket launcher using the new heavy warhead rocket has been evaluated for incorporation into the subsystem.

CHARACTERISTICS:

EFFECTIVE RANGE:	Not applicable
ELEVATION:	Fixed
TRAVERSE:	Fixed
EMPTY WEIGHT:	82 lbs without launcher
LOADED WEIGHT:	540# per mount, maximum
SIGHTING:	XM60 Reflex

MAINTENANCE AND SUPPLY:

Maintenance	AVUM	AVIM and Depot
Instruction:	TM 9-1090-204-12	-34
Repair parts:	TM 9-1090-204-20P	-35P
Special tools:	TM 9-1090-204-20P	-35P
Shop sets:	Not applicable	

MODIFICATION DATA:

ORGANIZATIONAL INSTRUCTIONS: TM 55-1520-219-10.
TM 55-1520-220-10.

REMARKS:

2-30. M158A1, 2.75 Inch Rocket Launcher (7-Tube).

Rocket Launcher:	M158A1	
Aircraft Series:	UH1B/M	AH-1
Average Procurement Price:	$808.	
Type Classification:	STD A	
Logistic Control Code:	A	
Nomenclature:	Launcher, Rocket Aircraft, 2.75 Inch – M158A1 (7-Tube).	
Description:	The M158A1 is a reparable 7-tube 2.75 inch rocket launcher used on the UH1/B/M and AH1 Aircrafts. It is 58 inches long and weighs 48 lbs.	
Remarks:	TOE Authorization – not available this printing.	
Basis of Issue:	Approved BOI not available. For planning purposes: 2 each per UH-1B/M armed with M21 Subsystem. 1 each per AH-1 aircraft (all).	
Maintenance and Supply:	TM 9-1055-460-14. (TM 9-1055-460-13 now being prepared will replace -14).	

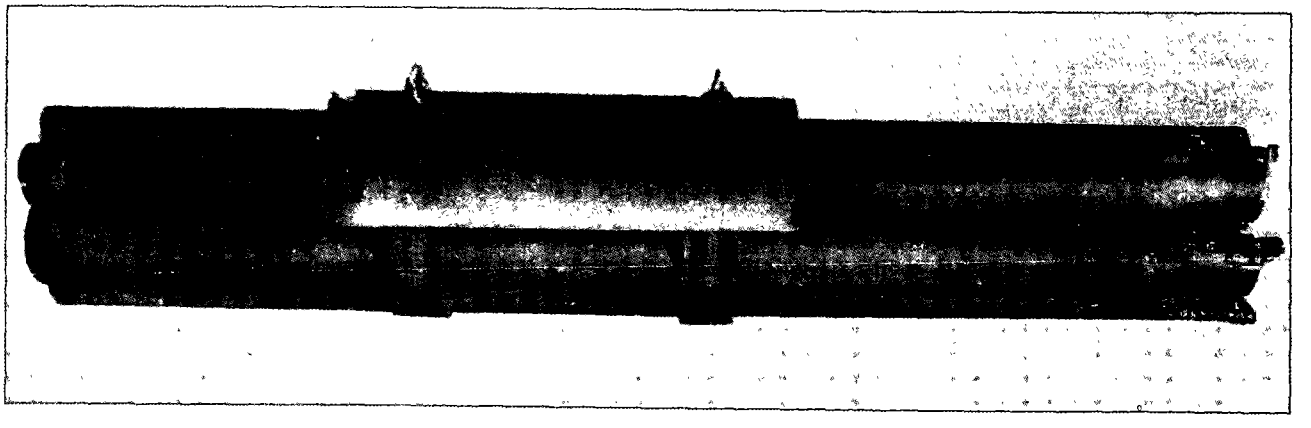


Figure 2-28. Launcher, Rocket Aircraft, 2.75 Inch-M158A1 (7-Tube)

2-31. M200A1, 2.75 Inch Rocket Launcher (19-Tube).

Rocket Launcher:	M200A1	
Aircraft Series:	UH1B/M	AH-1
Reprocurement Price:	$1385.	
Type Classification:	STD A	
Logistic Control Code:	A	
Nomenclature:	Launcher, Rocket Aircraft, 2.75 inch M200A1.	
Description:	The M200A1 is a 19-tube reparable 2.75 inch rocket launcher, used on the UH1B/M, AH1 Aircraft. It is 60.6 inches long and weighs 139 lbs.ghs	
Remarks:	TOE Authorization – not available this printing.	
Basis of Issue:	Approved BOI not available. For Planning Purposes. 2 each per UH1B/M equipped with M156 mount 3 each per AH-1 aircraft	
Maintenance and Supply:	TM 9-1055-460-14. (TM 9-1055-460-13 now being prepared will replace -14).	

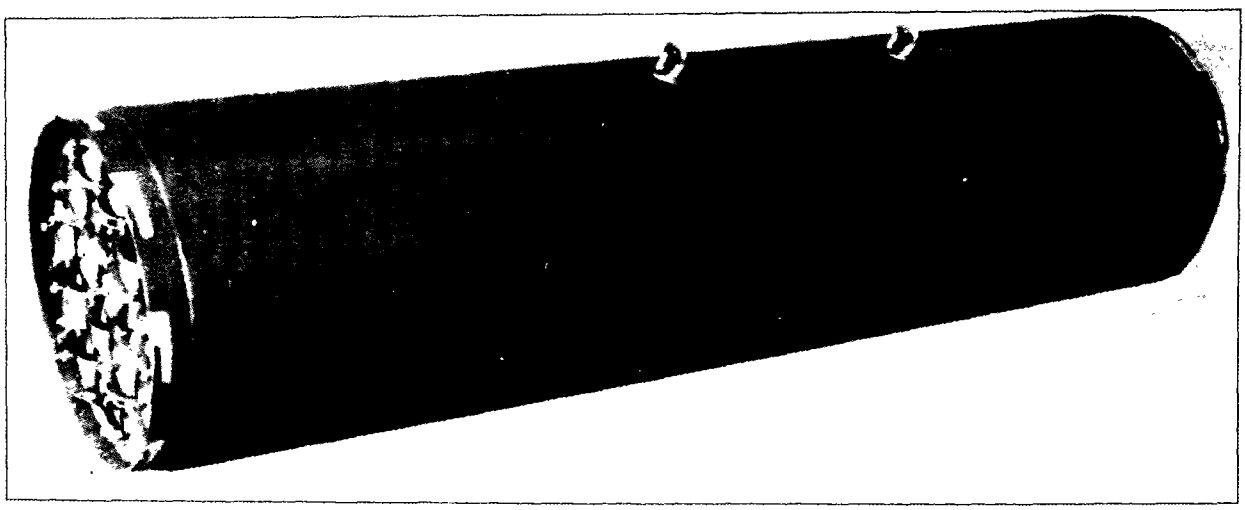


Figure 2-29. Launcher, Rocket Aircraft, 2.75 Inch-M200A1 (19 Tube)

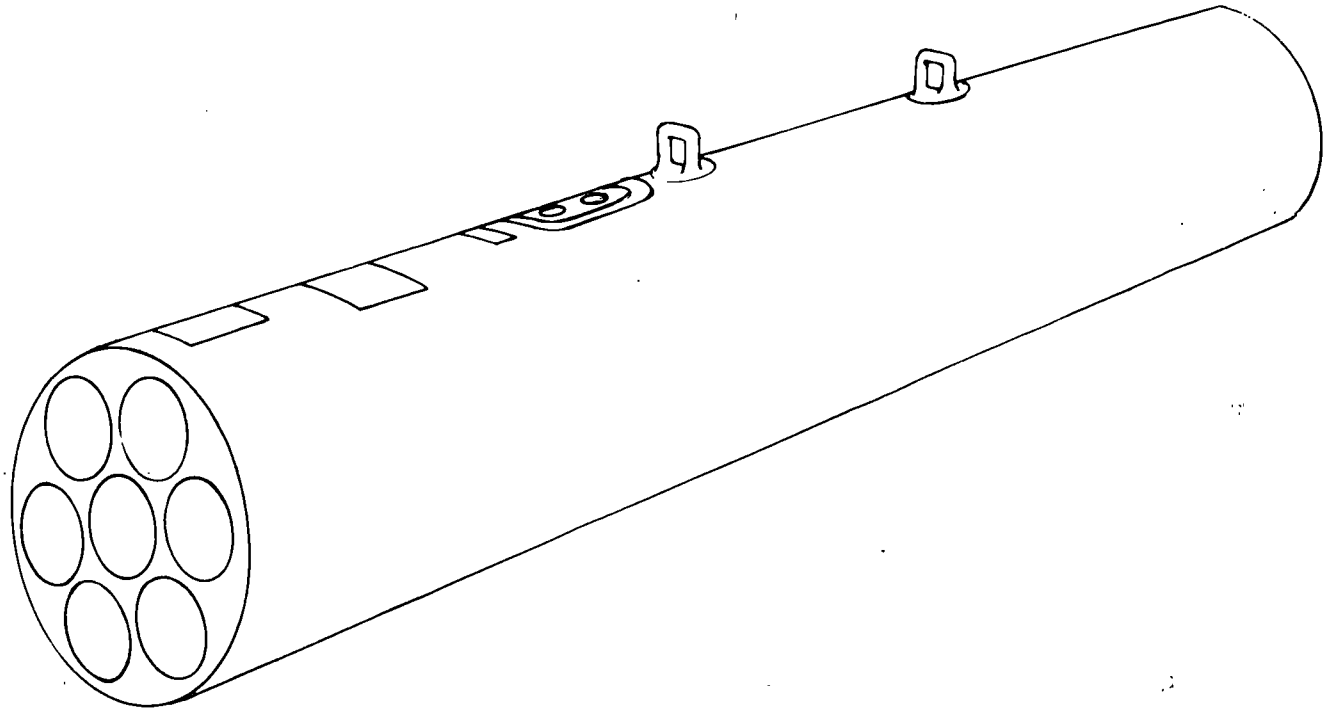


Figure 2-30. Launcher, Lightweight, 2.75 Inch-M260 (7-Tube)

2-32. M260, 27.5 Inch Rocket Launcher (7-Tube).

ROCKET LAUNCHER: M260
AIRCRAFT SERIES: AH-1, AH-64
REPROCUREMENT PRICE: $1639 (First Buy)
TYPE CLASSIFICATION: STD
LOGISTIC CODE: A

NOMENCLATURE:

Launcher, Rocket, Aircraft: 2.75 Inch M260 (LWL)

DESCRIPTION: The M260 is a nonrepairable 2.75 Inch Rocket Launcher used on AH-1S aircraft equipped with rocket management subsystem and on AH-64 aircraft. It is capable of at least 16 missions. It is 65 inches long and weighs 35 pounds.

REMARKS: There is no TOE authorization for the LWL M260. Due to the expendable nature of the launcher the decision has been made to class the item as Class V expendable. The launcher should be stored at ammunition resupply points and issued as Class V material as needed. The M260 and M261 Lightweight Launchers are the only 2.75 Inch Rocket Launcher that will interface with the Rocket Management Subsystem M138, the MK66 Mod 1 Rocket Motor and the M433 remote settable fuze currently in inventory.

BASIS OF ISSUE:

2 each per AH-1 aircraft
2 each per AH-64 aircraft. (Planning factor only)

MAINTENANCE AND SUPPLY:

TM 9-1055-460-13 & Process

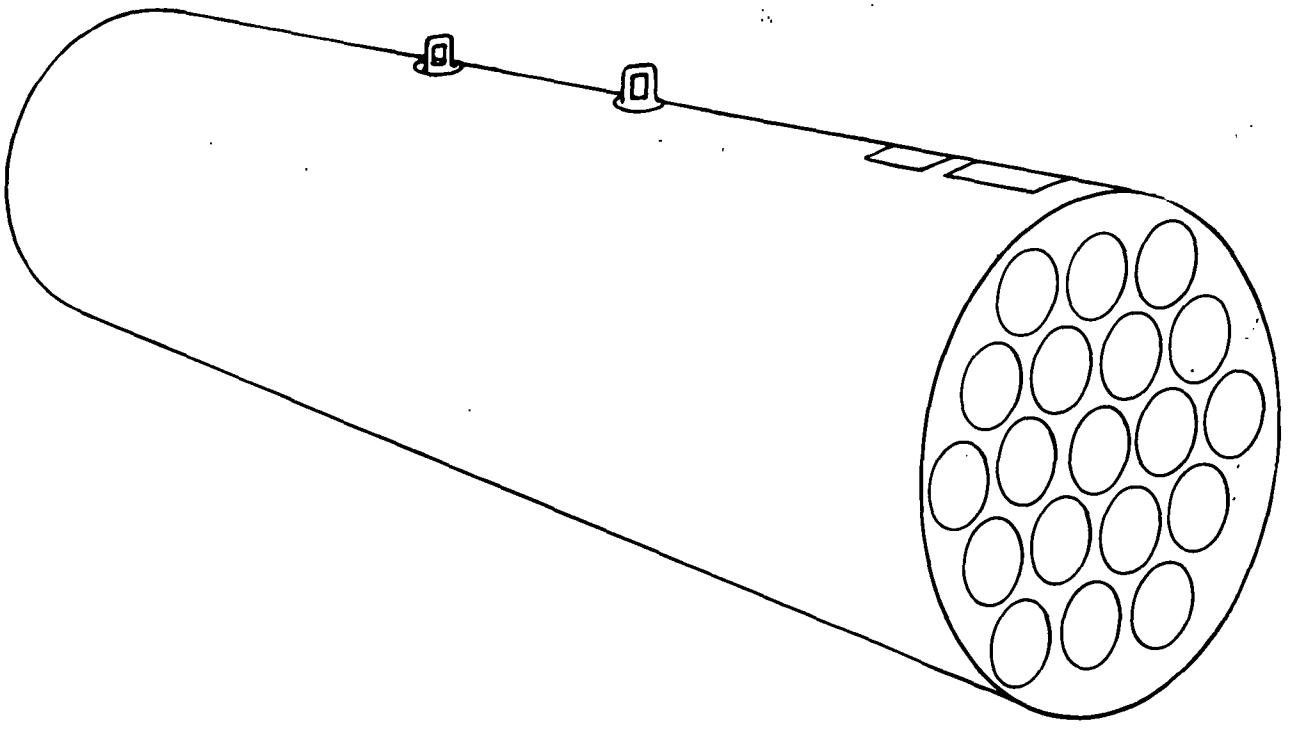


Figure 2-31. Launcher, Lightweight, 2.75 Inch-M261 (19-Tube)

2-33. M261 — 2.75 Inch Rocket Launcher (19 Tube).

ROCKET LAUNCHER: M261
AIRCRAFT SERIES: AH-1, AH-64
PROCUREMENT PRICE: $2965 (First Buy)
TYPE CLASSIFICATION: STD
LOGISTIC CODE: A

NOMENCLATURE:

Launcher, Rocket, Aircraft: 2.75 Inch M261 (LWL).

DESCRIPTION: The M261 is a nonrepairable 2.75 Inch Rocket Launcher used on AH-1S aircraft equipped with rocket management subsystem and on AH-64 aircraft. It is capable of at least 16 missions. It is 65 inches long and weighs 80 pounds.

REMARKS: There is no TOB authorization for the LWL M261. Due to the expendable nature of the launcher the decision has been made to class the item as Class V expendable. The launcher should be stored at ammunition resupply points and issued as Class V material as needed. The M260 and M261 lightweight launchers are the only 2.75 Inch Rocket Launcher that will interface with the Rocket Management Subsystem M138, MK66 Mod 1 Rocket Motor and the M433 remote settable fuze currently in inventory.

BASIS OF ISSUE:

2 each per AH-1S
2 each per AH-64. (Planning factor only)

MAINTENANCE AND SUPPLY:

TM 9-1055-460-13&P

2-34. XM230E1 Armament Subsystem, Helicopter, Turret Mounted, 30mm, YM230.

ARMAMENT SUBSYSTEM: XM230E1
APPLICABLE AIRCRAFT — TYPE, MODEL, SERIES: AH-64A
AVERAGE PROCUREMENT PRICE: TBD
TYPE CLASSIFICATION: Development
LOGISTIC CONTROL CODE:

NOMENCLATURE: Armament Subsystem, Helicopter, Turret Mounted, 30MM, XM230

DESCRIPTION: Consists of the following major components: 30mm Chain Gun, Turret, Ammunition Storage and Transfer Mechanism and Control System. The Gun System is a 30mm XM230E1 Hughes Chain Gun which fires 30mm XM788/789 (ADEN/DEFA class) ammunition having a rate of fire of 725 ± 25 RPM. The weapon with drive motor and recoil adapters attached weights 110 lbs. The Turret weight is 156 lbs.

CHARACTERISTICS:

Effective Range: 4000 Meters
Elevation: +10° to -60°
Muzzle Velocity: 805 MPS
Rate of Fire: 725 ± 25 RPM
Traverse: ± 110°
Empty Weight: 568 Lbs.
Ammunition: 30mm XM788/789 and ADEN/DEFA class ammo
Capacity: 1215 Rounds
Sighting: IHAD SS and TADS

MAINTENANCE AND SUPPLY:

Maintenance Instruction:	AVUM and AVIM Support DTM 9-1090-208-23
Repair Parts:	DTM 9-1090-208-23&P
Special Tools:	TM 9-
Shop Sets:	SC 4931-95-CL-A21 SC 4933-95-CL-A21

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENTS

Operational instructions for subsystem can be found in TM 55-

2-35. HELLFIRE Modular Missile System (HMMS).

ARMAMENT SUBSYSTEM: HELLFIRE
APPLICABLE AIRCRAFT:— TYPE, MODEL, SERIES: AH-64A
AVERAGE PROCUREMENT PRICE: TBD
TYPE CLASSIFICATION: Engineering Development
LOGISTIC CONTROL CODE:

NOMENCLATURE: HELLFIRE Modular Missile System (HMMS)

DESCRIPTION: The Point Target System (PTS) for the AH-64A is comprised of the HELLFIRE Modular Missile System (HMMS) (Missiles and launchers), HELLFIRE Missile Equipment (HME) (electronics and dedicated control panels), and associated multipurpose controls and displays. This system can be used with any of three seeker heads: Laser, RF/IR, or IRIS. The AH-64A carries eight HELLFIRE missiles for th e p;rimary mission and up to sixteen missiles in alternate configurations.

CHARACTERISTICS:

Effective Range: Classified
Missile Velocity: Classified
Rate of Fire: As Selected by Pilot/Gunner
Empty Weight: Approximate Wt — Missile 90 lbs — Launcher 150 lbs.
Missile Capacity: 4 per Launcher up to 4 Launchers per AH-64A
Ammo Type: Heat
Sighting: TADS

MAINTENANCE AND SUPPLY:

Maintenance Instructions:	AVUM and AVIM Support
Aviation Unit Maintenance/Aviation Intermediate Maintenance Manual, Dummy and Training Missile, HMMS	DTM 9-6920-475-13
Aviation Unit Maintenance Manual, HMMS	DTM 9-1425-475-20
Aviation Intermediate Maintenance Manual, HMMS	DTM 9-1425-475-30
Operator, Unit and Intermediate Support Maintenance Manual,Test Equipment, HMMS	DTM 9-4935-475-13
Repair parts	TM 9-
Special Tools	TM 9-
Shop Sets	TM 9-

2-35. HELLFIRE Modular Missile System (HMMS) (Con't).

MODIFICATION DATA REQUIRED FOR INSTALLATION, FUNDING, CONTROLS, AND OPERATING INSTRUCTIONS:

KIT	NSN	PUBLICATION	NICP	FUND REQUIREMENTS

Operational instructions for subsystem can be found in TM 55-

2-36. Aircraft Armament Subsystems Ammunition.

7.62mm Cartridges*

MODEL DESIGNATION & TYPE	STATUS	PURPOSE	PACKAGING				DOT CLASSIFICATION	DODIC	REMARKS
			ROUNDS/ BOX	TYPE BOX	CU FT	WEIGHT POUNDS			
7.62mm Ball Linked 4/1 w/Tracer	STD	Anti-Personnel & Training	200	Metal M19A1	0.45	19	Small Arms Ammo C1 C QD 1	1305-A131	For M60 Series Guns
7.62mm Ball Linked 4/1 w/Tracer	STD	Anti-Personnel & Training	1500	Metal M548	1.30	120	Small Arms Ammo C1 C QD 1	1305-A165	Mini-Gun

NOTES:

1. Although other linked 7.62mm ammunition may be used with the above weapons, a basis of issue has not been established for other 7.62mm types or packs for Army aircraft application.
2. Only the primary DODIC is shown.
3. Although the two types of ammunition are interchangeable, the Mini-Gun type is preferred for its ease in loading and its quality features (polished brass, position of links, etc).

* Reference TM 9-1305-200

2-36. Aircraft Armament Subsystems Ammunition (Con't).

50 Caliber Cartridges*

MODEL DESIGNATION & TYPE	STATUS	PURPOSE	PACKAGING				DOT CLASSIFICATION	DODIC	REMARKS
			ROUNDS/ BOX	TYPE BOX	CU FT	WEIGHT POUNDS			
.50 Caliber, 4 API Linked w/APIT	STD	Anti-Personnel & Anti-Material	100	Metal M2A1	.45	37.5	Small Arms Ammo C1 C QD 1	1305-A577	
.50 Caliber, 4 Ball Linked w/Tracer	STD	Anti-Personnel & Training	100	Metal M2A1	.45	37.5	Small Arms Ammo C1 C QD 1	1305-A577	

NOTE: API/APIT may also be linked 3 to 1 ratio and may also be issued for training. Only primary DODIC is shown.

* Reference TM 9-1305-200.

2-36. Aircraft Armament Subsystems Ammunition (Con't).

20 mm Cartridges*

MODEL DESIGNATION & TYPE	STATUS	PURPOSE	PACKAGING				DOT CLASSIFICATION	DODIC	REMARKS
			ROUNDS/ BOX	TYPE BOX	CU FT	WEIGHT POUNDS			
M56A3 HEI Linked 4/1 with M220 TPT	STD	Anti-Personnel Light Anti-Materiel, Capable of Initiating Oil Fires	100	Metal M548	1.3	93	Ammo F/Cannon W/Expl. Proj. C1 A QD C1 7	1305-A653	For Gun M195 Range to 3000 meters
M55A2 TP Linked	STD	Target Practice	100	Metal M548	1.30	93	Small Arms Ammo C1 C QD 1	1305-A926	For Gun M195 Range to 3000 meters
M55A2 Linked 4/1 with M220 TPT	STD	Target Practice w/Tracer	100	Metal M548	1.30	93	Small Arms Ammo C1 C QD 1	1305-A896	For Gun M195 Range to 3000 meters

2-36. Aircraft Armament Subsystems Ammunition (Con't).

40mm Cartridges*

MODEL DESIGNATION & TYPE	STATUS	PURPOSE	PACKAGING				DOT CLASSIFICATION	DODIC	REMARKS
			ROUNDS/ BOX	TYPE BOX	CU FT	WEIGHT POUNDS			
M383 HE	STD	Anti-Personnel	50 (all linked)	Wood	1.2	53	Ammo F/Cannon W/Expl. Proj. Dot Shipp. C1 A QD C1 7	1310 B571	W/M16A2 link Ref. DTM 1310-221-12 (PA-AD-MB)
M384 HE	STD	Anti-Personnel	50 (all linked)	Wood	1.2	53	Ammo F/Cannon W/Expl. Proj. Dot Shipp. C1 A QD C1 7	1310 B572	W/M16 link
								1310 B470	W/M16A1 link Ref. POMM 1310-204-12 (PA-DB7)
M385 Practice	STD	Practice (Solid Aluminum or Plastic Proj)	50 (all linked)	Wood	1.2	53	Ammo F/Cannon W/Inert Proj. Dot Shipp. C1 C QD C1 1	1310 B576	W/M16 link
								1310 B480	W/M16A1 link
M430 HE DP	STD	Anti-Personnel Anti-Materiel (Shaped Chg)	50 (all linked)	Wood	1.2	53	Ammo F/Cannon W/Expl. Proj. Dot Shipp. C1 A QD C1 7	1310 B542	W/M16A2 link Ref. DTM 1310-223-12 (PA-AD-MB)
XM677 HE T Linked 1/3 M383	Development	Anti-Personnel W/Tracer	50 (linked 1 rd to every 3 M383/M384)	Wood	1.2	53	Ammo F/Cannon W/Expl. Proj. Dot Shipp. C1 A QD C1 7	1310 B529	Ref. DTM 1310-217-12 (PA-DB7)
XM677 HE T Linked 1/3 M384								1310 B527	
XM683 HE	Development	Anti-Personnel (extended ranged RAP)	50 (all linked)	Wood	1.2	53	Ammo F/Cannon W/Expl. Proj. Dot Shipp. C1 A QD C1 7	1310 B471	Rocket Assisted Projectile Extended Range 3000 meters max. Ref. DTM 1310-220-12 (PA-DB7)
XM684 HE	Contingency	Anti-Personnel	50 (all linked)	Wood	1.2	53	Ammo F/Cannon W/Expl. Proj. Dot Shipp. C1 A QD C1 7	1310 B573	VT Fuze W/M383 Proj. Body W/M16A2 link Ref. DTM 1310-218-12 (PA-DB7)

2-36. Aircraft Armament Subsystems Ammunition (Con't).

40mm Cartridges* (Con't).

NOTES: 1. All rds linked with M16A1 link unless otherwise specified.

2. Those rds linked with M16 link are for use Armament Subsystem using M75 Automatic Grenade Launcher. Those rds linked w/M16A1 or M16A2 links are suitable for use in Armament Subsystem using the M75 or M129 Automatic Grenade Launcher.

Source: AARCOM (DRSAR-MAG-SD)

2-37. Aircraft Armament Subsystems Rockets.

2.75 inch Rockets*

TYPE	STDZN	PURPOSE	PACKAGING				DOT CLASS	FSC & DODIC	REMARKS Wpn Lchr M158A1 M200A1 M260 M261
			RDS/Per Box	Type	Cu Ft	Wt Lbs			
Rkt 2.75" Flech w/whd WDU-4A/A w/base fuze w/Mtr MK40	A	Anti-Personnel	4 and 25	Wood	3.0 17.9	127 776	A	1340-H459	Same
Rkt 2.75" HE w/whd M229 w/Fuze M429 w/Mtr MK40	A	Anti-Personnel	3, 4 and 25	Wood Wood Wood	3.6 3.47 20.8	134 162 996	A	1340-H488	Same
Rkt 2.75" HE w/whd M151 w/Fuze M429 w/Mtr MK40	A	Anti-Personnel	3, 4 and 25	Wood Wood Wood	3.0 3.0 17.9	107 127 776	A	1340-H489	Same
Rkt 2.75" HE w/whd M151 w/Fuze M423 w/Mtr MK40	A	Anti-Personnel Anti-Materiel	3, 4 and 25	Wood Wood Wood	3.0 3.0 17.9	107 127 776	A	1340-H490	Same
Rkt 2.75" SMK WP M156 w/Fuze M423 w/Mtr MK40	A	Target Marking & Incendiary	4	Wood	3.0	127	A	1340-H519	Same
Rkt 2.75" HE w/whd M229 w/Fuze M423 w/Mtr MK40	A	Anti-Personnel Anti-Materiel	3, 4 and 25	Wood Wood Wood	3.6 3.47 20.8	134 162 996	A	1340-H534	Same
Rkt 2.75" Practice WTU-1/B whd/slug w/Mtr MK40	A	Practice & Training	4 and 25	Wood Wood	3.0 17.9	127 776	B	1340-H828	Same

2-37. Aircraft Armament Subsystems Rockets (Con't).

2.75 Inch Rockets*

TYPE	STDZN	PURPOSE	PACKAGING				DOT CLASS	FSC & DODIC	REMARKS Wpn Lchr M158A1 M200A1 M260 M261
			RDS/Per Box	Type	Cu Ft	Wt Lbs			
Rkt 2.75" Flare w/whd M257 w/Fuze MBO w/Mtr MK40	A	Target Illumination	3 whds w/fuze, 3 Mtrs unassembled	Wood	3.0	117	A	1340-H180	Same
Rkt 2.75" Smoke Screening w/whd M259 w/Fuze MBO w/Mtr MK40	A	Battlefield Obscuration	4	Wood	3.5	135	A	1340-H116	Same
Rkt 2.75" HELP whd M247 w/Fuze PIBD M438 w/Mtr MK40	A	Armor Piercing Anti-Personnel	4	Wood	3.47	147	A	1340-H826	Same
Rkt 2.75" HE w/whd M151 w/Fuze M433 w/Mtr MK40	A	Selectable Functioning f/Bunker Penetration & Anti-Personnel	4 and 19	Wood Metal	3.0 9.9	127 490	A	1340-H471	M160 & M261 Only

Source: MICOM-DRSMI-SA, AV 746-2729

2-38. Aircraft Armament Subsystem Missiles.

TYPE	STDZN	PURPOSE	PACKAGING				DOT CLASS	FSC
			RDS/PER BOX	TYPE	CU. FT.	WT. LBS		
Guided Missile, Surface Attack: BGM-71A-1 (TOW)	A	Armor Piercing Anti-Personnel	1	Wood	4.38	89	A	1410
Guided Missile, Practice: BTM-71A-1 (TOW)	A	Training & Testing	1	Wood	4.38	89	A	1410

2-39. Aircraft Armor Systems.

Armor protection against enemy small arms fire is provided for Army aircraft crew and critical components. Types of crew protection include armored seat bottoms, side panels, and floor plates. Protection of critical components is provided by means of armor for engine, fuel and oil accessories, and flight control items. The amount and placement of protective armor varies among different types of aircraft systems. The U-6, U-1, U-8, U-9, U-10, U-21, T-41, T-42, C-12 and UV-18 do not have armor. The backing for armor in the existing aircrafts is mostly fiberglass. In the future fiberglass may be replaced by KEVLAR.

2-39. Aircraft Armor Systems (Con't).

AIRCRAFT	SYSTEM	ARMOR WEIGHT	MATERIAL	PART NO.	NSN
AH-64A	**Crew and component protection**	**382 lb/acft**	**B4C with Kevlar Nitrogen Inerting System ESR Steel Rigid Reticulated Foam**	**N/A - Furnished with aircraft and not available in kit form.**	
AH-1G/S TH-1G	Crew and component protection	243 lb/acft	B_4C with Fiberglass Backing	N/A - Furnished with aircraft and not available in kit form.	
CH-47A	Crew protection (Aerosmith seat)	234 lb/acft	Al_2O_3 with Fiberglass Backing	1560-CH47-225	1680-00-912-3944
CH-47A/B/C	Crew protection (Alsco seat)	139 lb/acft	Al_2O_3 with Fiberglass Backing	1560-CH47-300	1680-00-947-9829
CH-47A/B	Component protection	491 lb/acft	DPS and Fire Suppression Foam	113550-3 and 1560-CH47-365-1	1560-00-945-4828
CH-47C	Component protection	510 lb/acft	DPS and Fire Suppression Foam	113759 and 1560-CH47-365-4	1560-00-725-6073
CH-54A	Crew and component protection	1164 lb/acft	B_4C with Fiberglass and DPS	6407-75100-013	1680-00-073-8396
CH-54B	Crew and component protection	1233 lb/acft	B_4C with Fiberglass and DPSA	N/A - Furnished with aircraft and not available in kit form.	
OH-6A	Crew and component protection	119 lb/acft	B_4C with Fiberglass Backing and DPS	1560-OH6-000-3	1560-00-133-8381
OH-58A	Crew and component protection	112 lb/acft	B_4C with Fiberglass Backing	N/A - Furnished with acft and not available in kit form.	
OH-58C	Crew protection	108 lb/acft	B 4 C with Fiberglass Backing	N/A -	

2-39. Aircraft Armor Systems (Con't).

AIRCRAFT	SYSTEM	ARMOR WEIGHT	MATERIAL	PART NO.	NSN
UH-1B/H/M/V EH-1H, EH-1X	Crew protection	210 lb/acft	Al_2O_3 with Aluminum Backing	178061-3 and 178062-3	1680-00-933-9384 and 1680-00-933-9385
UH-1B/H/M/V EH-1H, EH-1X	Gunner protection	46 lb/acft	Al_2O_3 with Aluminum Backing	1560-UH1-350-1	1680-00-067-8208
UH-60A	Crew protection (Simula seat)	260 lb/acft	B 4 C with KEVLAR	70500-01151-101	1560-01-H62-2496
UH-60A	Crew protection (Ara Seat)	260 lb/acft	FSR Steel with Kevlar	D380 1, not yet assigned	

2-39. Aircraft Armor Systems (Con't).

AIRCRAFT	SYSTEM	ARMOR WEIGHT	MATERIAL	PART NO.	NSN
OV-1 B/C	Crew protection consisting of combinations of: (1) Nose armor, KA-60 camera provisions 63 lb/acft (2) Nose armor, SLAR provisions 53 lb/acft (3) Nose armor, without KA-60 and SLAR provisions 65 lb/acft (4) Side armor, homing antenna provisions 21 lb/acft (5) Side armor, without homing antenna provisions 19 lb/acft (6) Side armor, side panel with circuit breaker panel aft center right panel 24 lb/acft (7) Side armor, side panel common to all aircraft 68 lb/acft (8) Extended side armor and floor armor on OV-1C, 181 lb/acft		Al_2O_3 with Fiberglass Backing	1560-OV1-120-1 1560-OV1-121-1 1560-OV1-122-i 1560-OV1-123-1 1560-OV1-124-1 1560-OV1-125-1 1560-OV1-127-1 1560-OV1-006-1	1560-00-947-3446 1560-00-947-3447 1560-00-947-3448 1560-00-947-3451 1560-00-947-3452 1560-00-947-3453 1560-00-947-3450 1560-00-943-0754
OV-1D	Provisions only for armor. When armor is added, its weight will be the same as OV-1C		Al_2O_3 with Fiberglass backing	See OV-1B/C	See OV-1B/C
RV-1D	Provisions only for armor. When armor is added, its weight will be the same as OV-1B		Al_2O_3 with Fiberglass Backing	See OV-1B/C	See OV-1B/C

Al_2O_3 - Aluminum oxide composite armor
B_4C - Boron carbide composite armor
SiC - Silicon carbide
DPS - Dual property steel armor

Source: TSARCOM-DRSTS-ME

2-40. AH-64A Armor.

a. To provide maximum vehicle survivability and minimum vulnerability, armored seats are installed in both crewstations. A transparent barrier separates the crewstations. Strategic units are protected by high-tensile steel, boron carbide Kevlar panels, and rigid reticulated foam. The transparent crewstation barrier is constructed of laminated acrylic and polycarbonate layers, approximately 1-1/2 inches thick; it provides part of the canopy rollover structure. The nontransparent crewstation barriers consists of two side panels, a front panel, and a three-piece upper panel constructed of Kevlar.

b. Mounted in the airframe of each crewstation and in the CPG station floor are Kevlar panels for additional protection. The hydraulic servoactuator output end fittings and housings are constructed of ballistic-tolerant steel. The main, intermediate, and tail rotor gearboxes use this steel to protect bearings. In addition, the steel is used in flight controls and rotors. The cavities between the outer skin of the fuselage are filled with rigid reticulated foam and the fuel cells employ a Nitrogen Inerting Unit to prevent a fire from sustaining itself in either fuel cell.

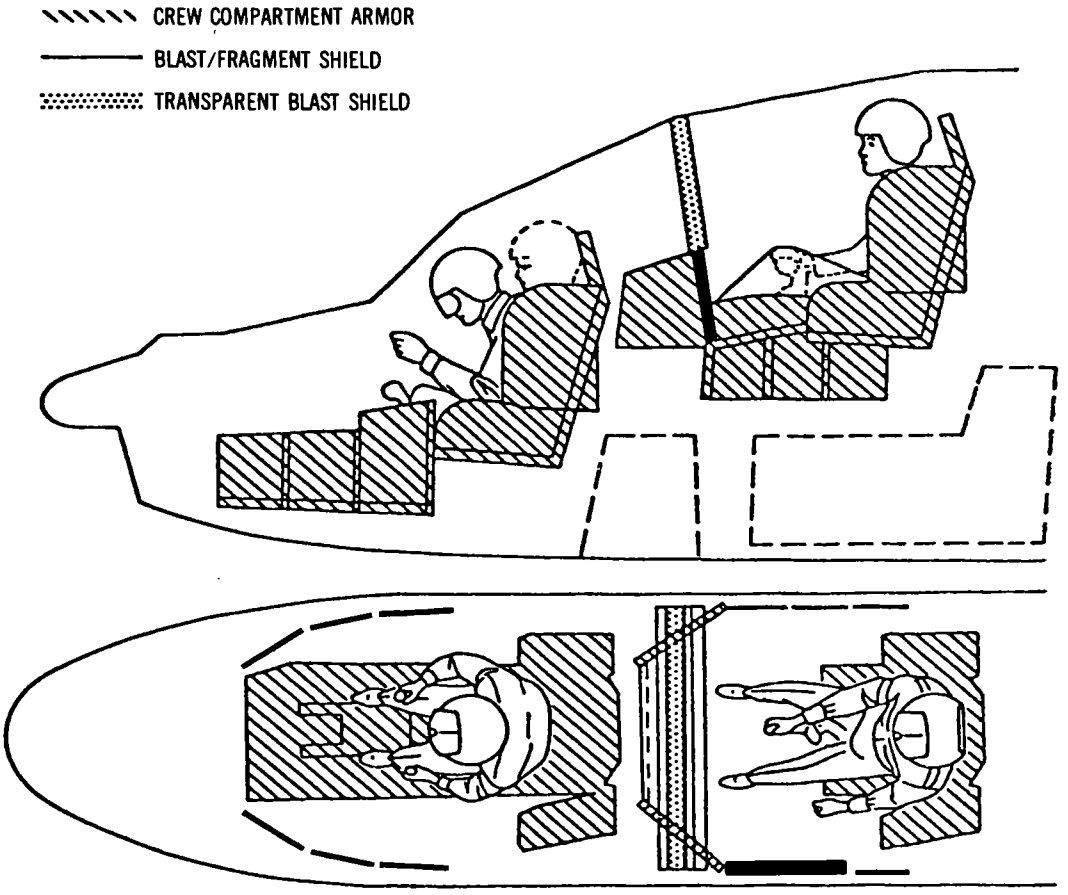


Figure 2-32. AH-64A Armor

2-41. AH-1G/S and TH-1G Armor.

a. The AH-1G/S and TH-1G aircraft are provided with aircrew and critical component armor. The pilot's seat is made of dual hardness steel armor. The fixed side panels are made of a hard faced composite material. The entire passive defense system for the gunner is made of a hard faced composite material.

b. Critical component armor is located on each side of the engine to protect the engine compressor section and the fuel control unit. The standard fuel cells are self-sealing as follows: bottom 33% capacity against .50 caliber, center 33% capacity 30 caliber, and the top 34% is not self sealing. The fuel crossover line is also self-sealing. The new crashworthy fuel cells are self-sealing against 20mm over their entire capacity. The fuel crossover line is self-sealing.

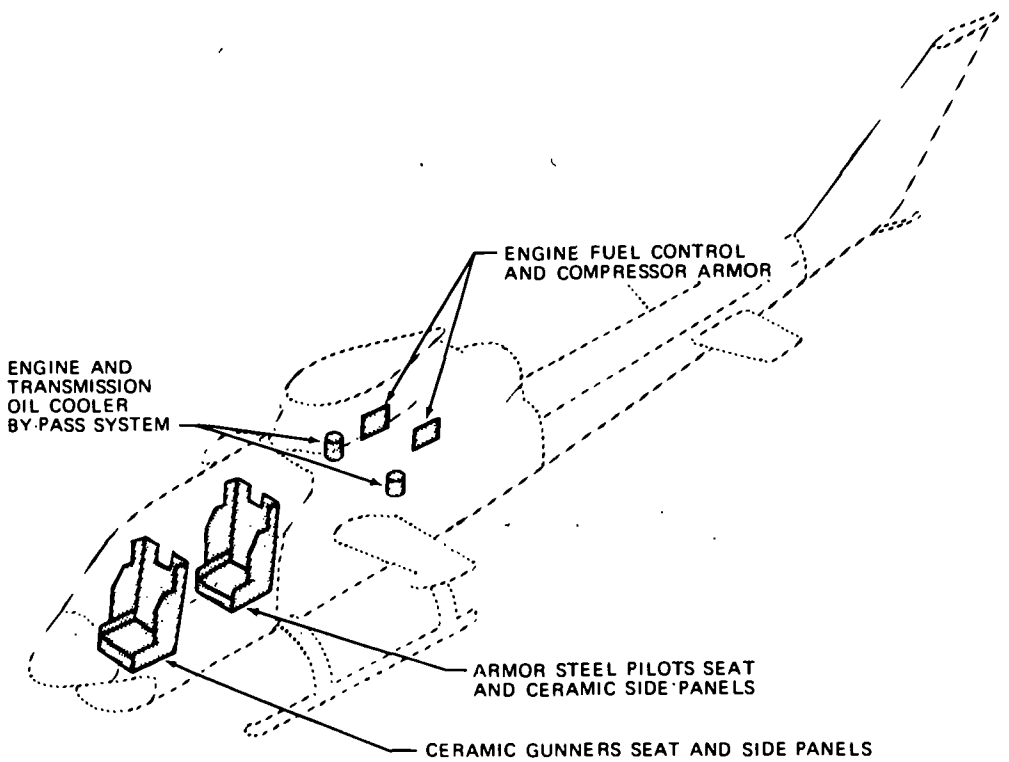


Figure 2-33. AH-1G/S and TH-1G Armor

2-42. CH-47D Armor.

a. The CH-47 aircraft are provided with aircrew and component armor between the engine transmission oil coolers in the aft pylon.

b. The aircrew armor material is aluminum oxide hard faced composite capable of defeating 30 caliber projectiles.

c. Steel armor has been provided between the engine and combining transmission oil coolers.

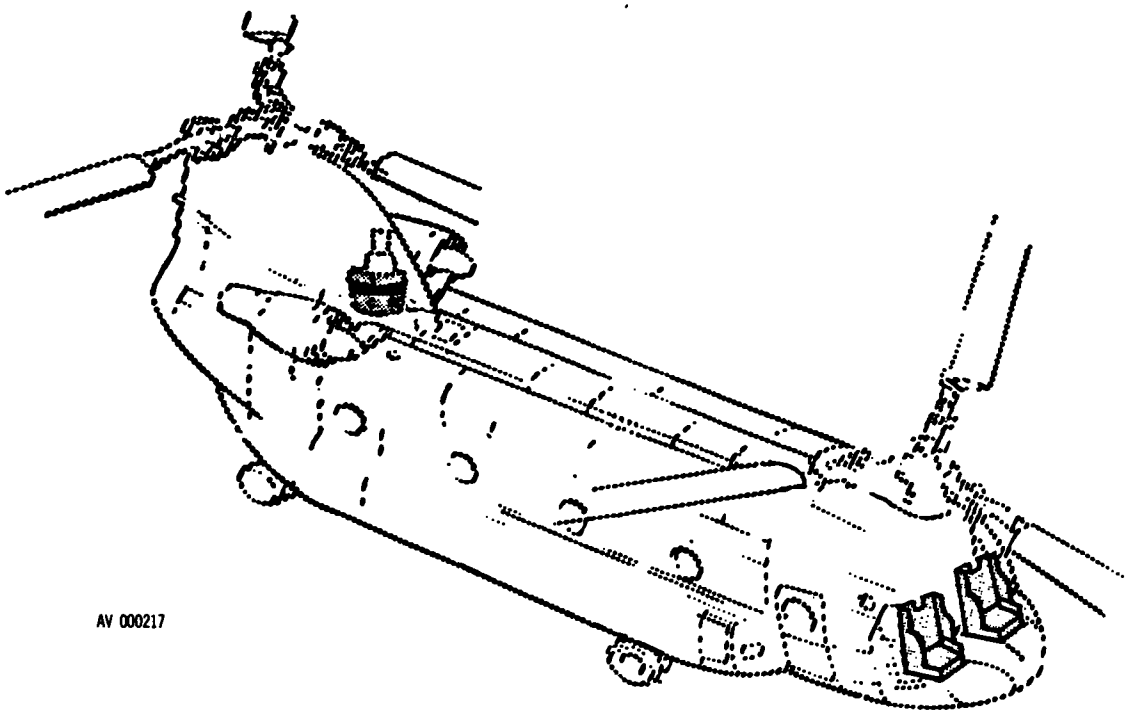


Figure 2-34. CH-47D Armor

2-43. Armor for the Armed and Armored Chinook.

a. Armor for the armed and armored Chinook consists of aircrew and component armor. The pilot and copilot have been provided with a crash attentuating integral 30 caliber armor seat.

b. The total installed weight of the armor system is 2700 pounds. Armor is provided for the following critical components.

(1) Controls closet area of flight controls system.

(2) Swiveling and pivoting dual actuators in forward and aft pylons.

(3) Copilot's control box.

(4) Linkage from copilot's controls to closet.

(5) Flight controls mix complex.

(6) Walking beam rod ends and bellcrank.

(7) Aft fuselage controls, rods, and bellcrank.

(8) Aft pylon controls, rods, and bellcrank.

(9) Accessory gear box, quill shaft.

c. The armor material is dual property steel capable of defeating 50 caliber API projectiles.

2-44. CH-54A Armor.

a. The CH-54A aircraft are equipped with aircrew and critical component armor. The pilot, copilot, and aft facing pilot are provided with armor placed on and around the existing seats. Protection is provided for the back, bottom, and sides. Frontal protection is via chest protector.

b. The 30 caliber armor material is primarily a boron carbide hard faced composite with dual hardness steel protecting the rod ends and bellcranks on the transmission deck. The weight of the armor for the pilot's seat is 120 pounds, for the copilot's seat is 111 pounds, and for the aft facing pilot's seat is 86 pounds. Armor is provided for the following critical components:

(1) Servos, rod ends, and bellcranks under the pilot's floor.

(2) Controls closet.

(3) External rod ends and bellcranks.

(4) Armored panel between the engine for separation purposes.

(5) Main servos.

(6) Primary hydraulic reservoir.

(7) Fuel tank sumps.

(8) Tail rotor servo control.

(9) Incorporation of a dual tail rotor control cable.

c. Total increase in aircraft weight is 1167 pounds.

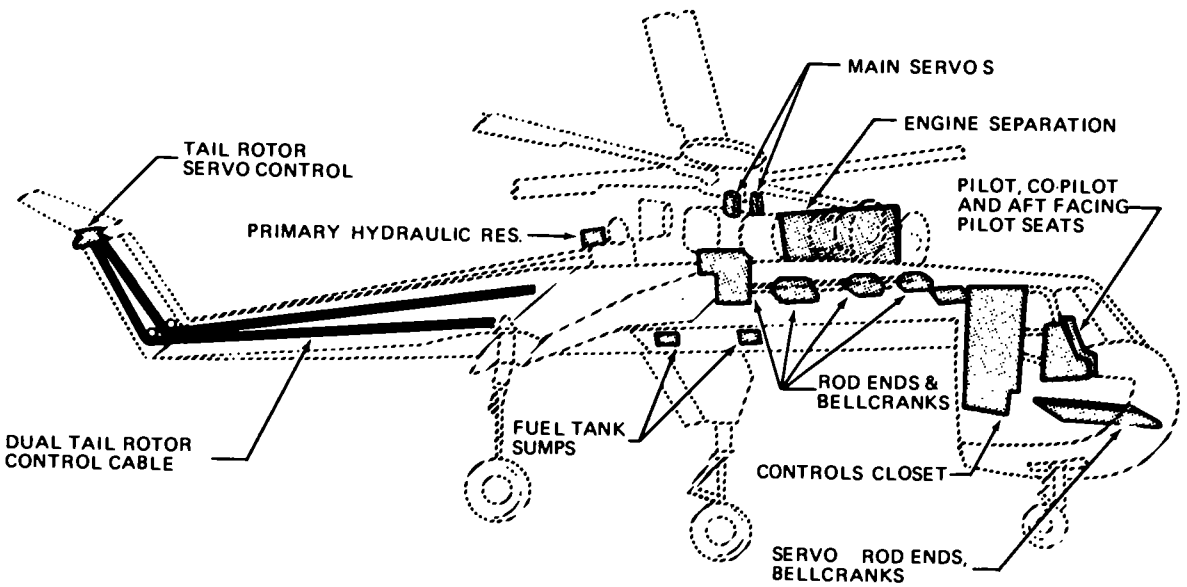


Figure 2-35. CH-54A Armor

2-45. OH-6A Armor.

a. The passive protection system for the OH-6A aircraft consists of aircrew and critical component armor. The pilot and copilot is provided with armor placed on the existing seats. Protection is provided for the back, bottom, and sides. Frontal protection is via chest protector.

b. The armor material is a 30 caliber boron carbide hard faced composite except for the panel under the seat and the engine compressor panel which are of dual property steel.

c. The weight of the complete installed system is 130 pounds.

d. Armor is provided for the following critical components:

(1) Engine compressor.

(2) Self-sealing oil lines.

(3) Self-sealing fuel lines.

(4) Engine and transmission oil cooler bypass valves.

(5) Fuel control valve.

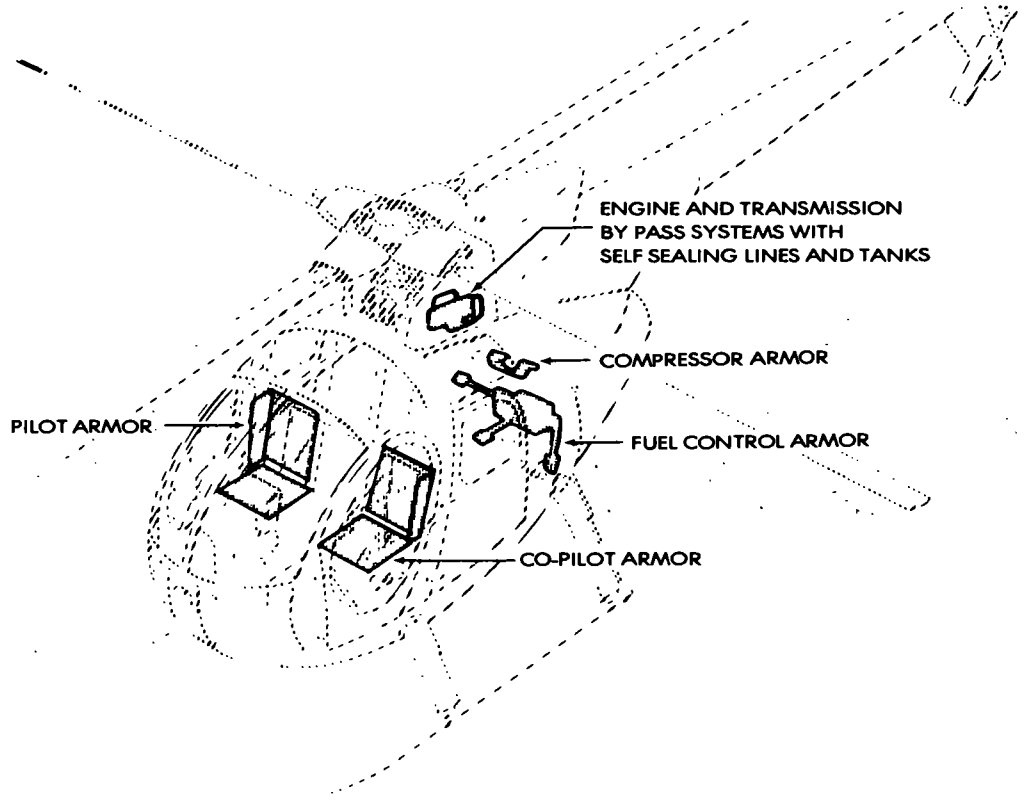


Figure 2-36. OH-6A Armor

2-46. UH-1 Series Armor.

a. The UH-1 series aircraft are equipped with aircrew armor for the pilot and copilot. The armor consists of an integrated armored seat. Protection is provided from the bottom, rear, and sides. Frontal protection is via chest protector.

b. The armor material is aluminum oxide hard faced composite capable of defeating 30 caliber projectiles.

c. The headguard is an armor panel which attaches to the back of the seats. The gunner's seat armor unit is a plate of armor material securely fastened to the crew seats in the UH-1. It is provided with a cushion for the crewman to sit on.

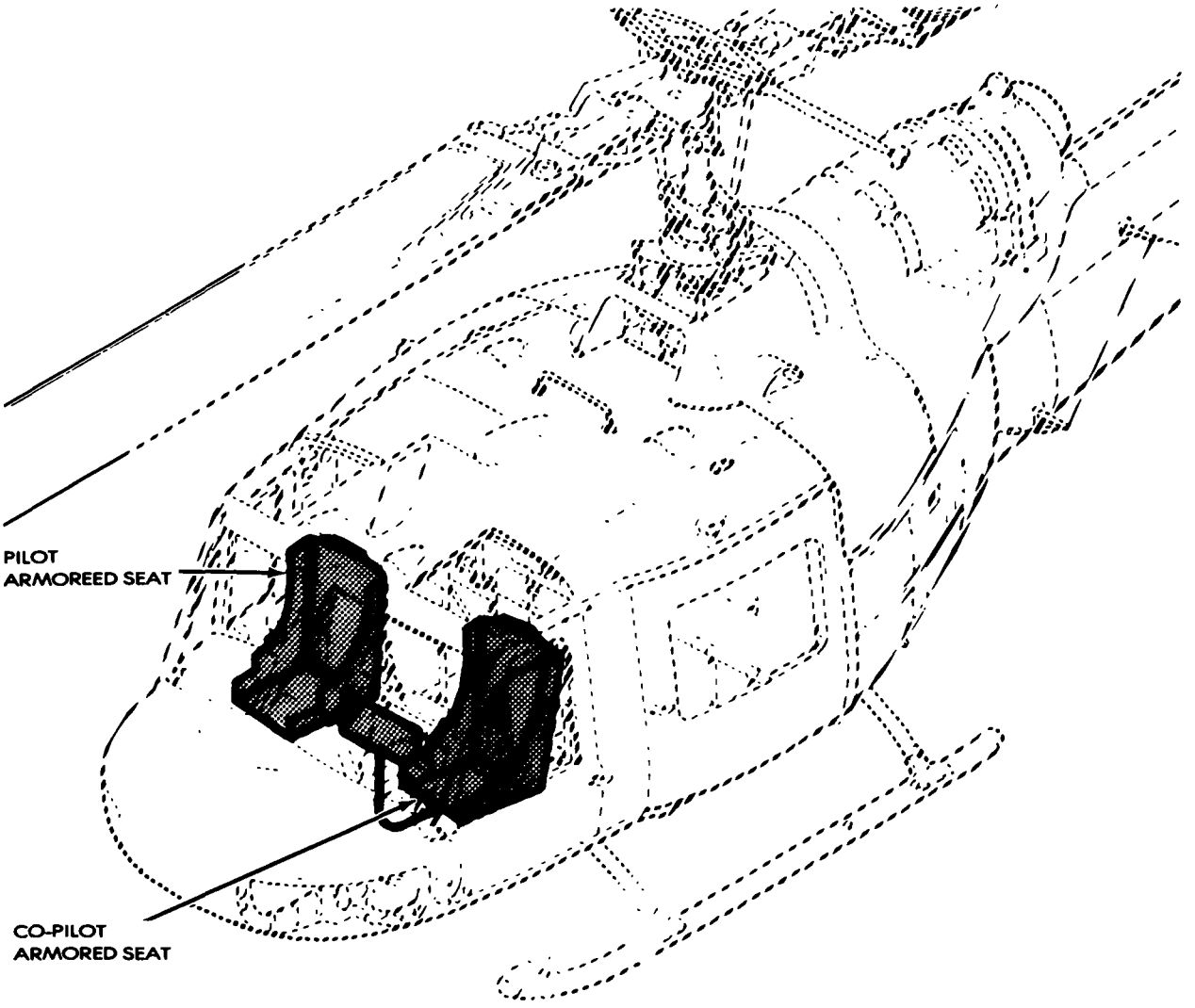


Figure 2-37. UH-1 Armor

2-47. OV-1 Armor.

a. The OV-1 aircraft are provided with aircrew and critical component armor. The aircrew armor is located on the nose bulkhead cockpit sides, floor, hatch, and forward windows. This armor had to be mounted on the airframe since the ejection seat would not tolerate the weight.

b. The material used for aircrew armor is a 30 caliber aluminum oxide hard faced composite system. Critical component protection, which protects a hydraulic valve in the landing gear system, is dual property steel armor.

c. Due to the various aircraft and avionic configurations, different armor sub-kits are required for any one model. All OV-1C aircraft require five of these sub-kits, while the OV-1B requires only four. The extended side and floor armor sub-kit provided for the OV-1C is not used on OV-1B aircraft due to weight and balance considerations. Consequently the armor systems for the OV-1C model aircraft weigh 360 pounds as opposed to 180 pounds for the OV-1B.

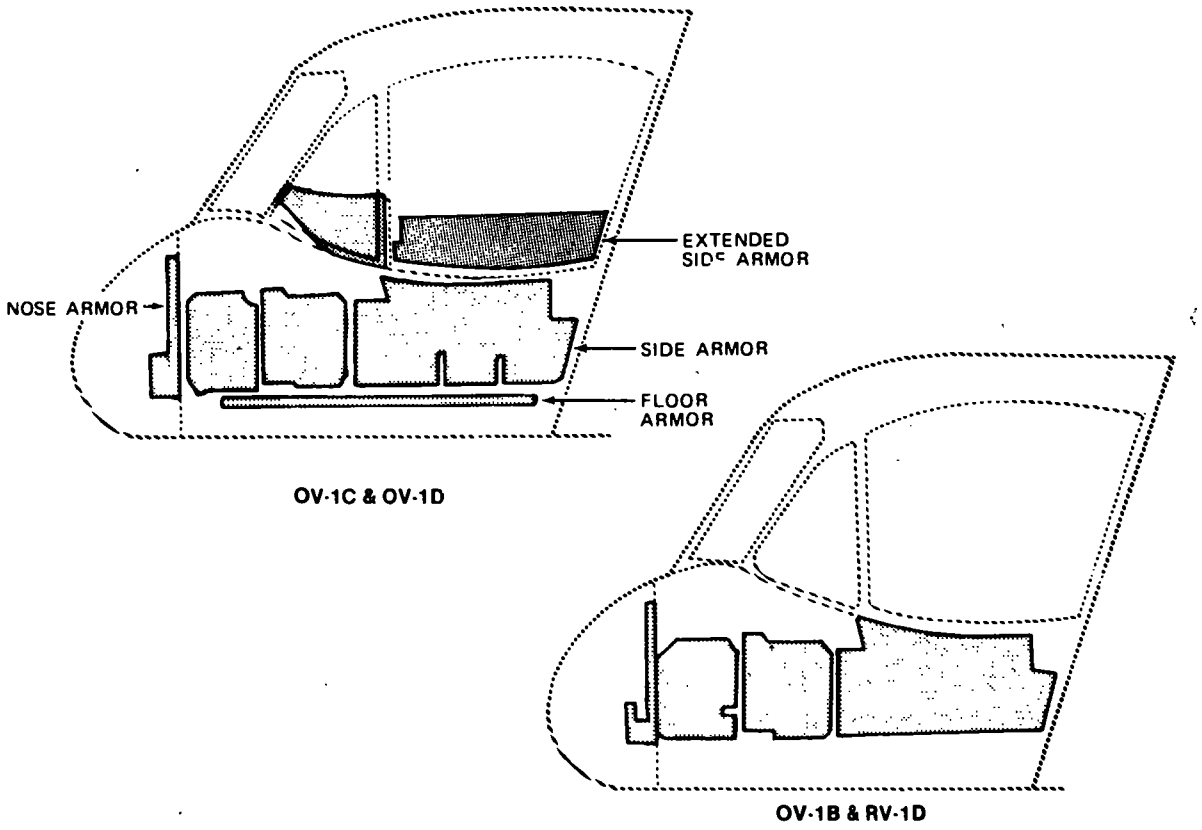


Figure 2-38. OV-1 Armor

Section III. FERRYING AND SHIPPING

2-48. Surface Shipment.

Preparation of large numbers of aircraft for simultaneous mass movement by ocean transport had its inception in the latter part of June 1965.

Deployment of the 1st Cavalry Division (Airmobile) involved movement of a large number of aircraft, which was a first of this type and magnitude for the U.S. Army. Since the operation involved movement of approximately 500 aircraft, staging areas had to be established to receive, process, and marshall in accordance with the numbers designated for each of four vessels. Ports of loading were designated at Brookley Air Force Base, Mobile, Ala., and Mayport Naval Base, Jacksonville, Fla.

As a result of the experience with the 1st Cavalry Division deployment and other vessel shipments of aircraft to Southeast Asia, time/motion studies have provided input for developing the following table relating to processing Army aircraft for surface shipment.

Source: TSARCOM-DRSTS-SDP

2-49. Surface Shipment Processing Time.

Type of Aircraft	MAN HOURS (M/H) AND ELAPSED TIME (ET) RQR TO PROCESS 1 EA. FOR OVERSEAS SHIPMENT				MAN-HOURS AND ELAPSED TIME TO DEPROCESS 1 EA.				REFERENCED PUBLICATION
	Top Deck Reusable		Below Deck		Top Deck Reusable		Below Deck		
	M/H	ET	M/H	ET	M/H	ET	M/H	ET	
AH-1[1]	12[2]	2[2]	18	3	6	1	12	2	TM55-1500-339S
AH-64A 3/	—	—	—	—	—	—	—	—	TM 55-1520-238-S
CH-47	24[1]	4	NA	NA	18	3	NA	NA	TM1-CH47S
CH-54	48[1]	6	NA	NA	56	8	NA	NA	TM1-CH54S
OH-6A	NA	NA	3	1	NA	NA	3	1	TM1-OH6-S
OH-58	NA	NA	3	1	NA	NA	3	1	TM55-1500-338S
UH-1[1]	12[2]	2[2]	18	4	6	1	12	2	TM55-1500-219S
U-8F	40	5	NA	NA	48	6	NA	NA	TM55-1510-201-S
U21/RU21	40	5	NA	NA	48	6	NA	NA	TM55-1510-200-S
OV-1	45	5	NA	NA	55	9	NA	NA	TM55-1510-217-S
UH-60A	4	2	4	1	4	1	4	1	TM 55-1520-237-S

1 Cover sets are not items to be requisitioned. Only CONUS and overseas outloading points preparing aircraft for movement are authorized to request cover sets.

2 Not recommended, covers should be used if placed on top deck.

3 Surface shipment processing times have not been developed.

2-50. Air Shipment Processing Time.

Aircraft Type	Air Force Aircraft	No. of Aircraft Loaded	Required Disassembly	Disassebly Time Per Aircraft		Reassembly Time Per Aircraft		Referenced Publications
				M/H	ET (Hrs)	M/H	ET (Hrs)	
AH-1	C-5	12	Main rotor blades, stub wings, tail rotor blades, synch elevators ejector tube assembly.	8	2	12	3	TM55-1500-339-S
		7	Synch elevators and lower TOW Missile Launchers.	.25	.25	.25	.25	
	C-141	15	Same, plus Low Profile Skid	14	4	15	5	
		3	Main rotor blade & hub, mast & swash plate assy, stub wings, tail rotor blades, fairing assys, transmission cowling,antennas, ejector tube assy synch elevators, landing skids.	24	4	36	6	
	C-130	1	Same, less synch elevators & landing skids.	21	3	24	4	
CH-47	C-5	3	Rotary wing blades forward cowling ring & fairing assys, forward transmission pkg, aft pylon pkg.	174	32	225	36	TM55-1520-241-S
CH-54	C-5	3	Main rotor blades, tail rotor blades, stabilizer assy, antennas & poles, main landing gear & support. Separate cockpit from fuselage at station 210.	180	16	225	36	TM1-CH54-S
OH-6A	C-5	26	Main rotor blades, horizontal stabilizer, upper vertical stabilizer.	6	3	6	3	TM1-OH6-S
	C-141	6	Same	6	3	6	3	
	C-130	3	Same	6	3	6	3	
OH-58	C-5	13	Main rotor blades, vertical stabilizer.	1.5	.5	2	1	TM55-1500-338S
		22	Same, plus "piggy-back" configuration.	3	1	6	3	

2-50. Air Shipment Processing Time (Con't).

Aircraft Type	Air Force Aircraft	No. of Aircraft Loaded	Required Disassembly	Disassembly Time per Aircraft		Reassembly Time per Aircraft		Referenced Publications
				M/H	ET (Hrs)	M/H	ET (Hrs)	
AH-64A	C-5 1/	6	Horizontal Stabilator, Air Data Sensor, Tail Rotor Blades (2nd, 4th and 6th helicopter to be loaded). Hellfire launches, pylons, wings, main rotor blades (folded).	18	3	21	3	TM 55-1520-238-S
	C141	2	Area weapon, horizontal stabilator, vertical stabilizer, air data sensor, main rotor blades, main rotor inlet fairing, main rotor head and mast unit, two (ea) lower tail rotor blades, Hellfire launchers, wing's, antennas (radar warning blade, transponder, Df loop and doppler).					

1/ Transportability demonstration scheduled for Dec 1984

2-50. Air Shipment Processing Time (Con't).

Aircraft Type	Air Force Aircraft	No. of Aircraft Loaded	Required Disassembly	Disassembly Time per Aircraft		Reassembly Time per Aircraft		Referenced Publications
				M/H	ET (Hrs)	M/H	ET (Hrs)	
OH-58 (Cont.)	C-141	4	Main rotor blades & hub & mast, vertical stabilizer.	7.5	1.5	10	3	
		8	Same, plus "piggy-back" configuration.	3	1	6	3	
	C-130	4	Same, plus tail rotor blades.	3	1	6	3	
UH-1 H,M,V EH-1H EH-1X	C-5	8	Main rotor blades, stabilizer bar, synch elevators, antennas, hinged panels.	12	3	18	5	TM55-1500-219S
		11 (C, M)	Same, plus "piggy-back" configuration.	16	4	26	7	
	C-141	1 or 2	Main rotor blades, stabilizer bar, rotor head & mast assy, tail rotor blades, skid landing gear, antennas, rearview mirror, cargo suspension assy.	24	4	32	5	
		3 (D, H)	Same, plus "side-saddle" configuration.	30	5	40	7	
	C-130	1	Same	24	4	32	5	
		2 (D, H)	Same, plus "side saddle" configuration.	30	5	40	7	
U-8F	C-5	4	Wings	16	4	32	8	TM55-1510-201-S
U-21/ RU-21*	C-5	4	Wings	16	4	32	8	TM55-1510-200-S

*Not practical due to disassembly requirements.

2-50. Air Shipment Processing Time (Con't).

Aircraft Type	Air Force Aircraft	No. of Aircraft Loaded	Required Disassembly	Disassembly Time per Aircraft		Reassembly Time per Aircraft		Referenced Publications
				M/H	ET (Hrs)	M/H	ET (Hrs)	
OV-1B, C, D*	C-5	3	Engines, wings, horizontal stabilizer, outboard vertical stabilizers, drop tanks, flaps, antennas.	305	38	750	94	TM55-1510-217-S
	C-141	1	Same, plus propellers, center vertical stabilizer, main & nose landing gears, air scoop, cowlings & fairings, aileron pushrods, tubing.	402	50	950	119	
T-42A*	NA	NA	NA	NA	NA	NA		NVAL
UH-60A	C-5	6	Fold main & tail rotor blades. Remove stabilizer.	18	2	18	2	TM 55-1520-237-23-4
	C141	2	Fold main & tail rotor blades. Remove bifiliar, lower main rotor head, remove stabilizer & fold pylon.	27	3	27	3	TM 55-1520-237-23-4

*Not practical due to disassembly requirements.

NOTE: Current U.S. Army manuals for air shipment are not always current with Air Force doctrine, nor do they reference appropriate Military Airlift Command (MAC) regulations. Therefore, Computerized Air Planning Service (CAPS) at Langley Air Force Base or the nearest MAC command post should be asked to provide current policies.

Source: TSARCOM DRSTS-SDP

2-51. Weight and Cube for Crated Shipment.

TYPE OF AIRCRAFT	WEIGHT (LB)	CUBE (CU FT)
AH-1G	10,000	2800
AH-1S	10,000	2800
AH-64A	*	*
CH-47A	*	*
CH-47B	*	*
CH-47C	*	*
CH-47D	*	*
CH-54A	*	*
CH-54B	*	*
OH-6A	*	*
OH-58A	5,000	1,280
UH-1B	10,409	2,241
UH-1H	13,937	3,213
UH-1M	10,610	2,241
TH-55A	*	*
U-8F	*	*
U-10A	NVAL	NVAL
U-21/RU-21	*	*
OV-1B	*	*
OV-1C	*	*
OV-1D	*	*
T-41B	*	*
T-42A	*	*
UH-60A	*	*

(*) Crating of aircraft not recommended.

SOURCE: TSARCOM-DRSTS-SDP

Section IV. TOOLS

2-52. Aircraft Shop Sets/Tool Kits/Tool Sets (Common).

Aircraft special tools listing are not included in this manual. Refer to the Technical Publications listed in Chapter 1, Section IV (Standard Aircraft Characteristics).

2-53. Shop Sets.

NOMENCLATURE	SM/SC
Shop set, aircraft maintenance, ground handling and servicing, Set A, direct support (Army) (NSN 1730-00-999-6194)	SC 1730-99-CL-A01
Shop set, aircraft maintenance, ground handling and servicing, Set B, direct support (Army) (NSN 1730-)00-999-6195)	SC 1730-99-CL-A02
Shop set, aircraft maintenance, ground handling and servicing, Set C, general support (Army) (NSN 1730-00-999-6193)	SC 1730-99-CL-A03
Shop set, aircraft ground handling and servicing, airmobile, direct support maintenance, Battalion GHS (NSN 1730-00-900-8316)	SC 1730-99-CL-A04
Shop set, aircraft maintenance, fixed base, sheet metal, Set A, direct support (Army) (NSN 4920-00-944-1005)	SC 4920-99-CL-A02
Shop set, aircraft maintenance, fixed base, sheet metal, Set B, direct support (Army) (NSN 4920-00-944-1006)	SC 4920-99-CL-A03
Shop set, aircraft, maintenance, fixed base, sheet metal, Set C, general support (Army) (NSN 4920-00-944-0996)	SC 4920-97-CL-A04
Shop set, aircraft maintenance, fixed base, hydraulic, Set A, direct support (NSN 4920-00-321-9363)	SC 4920-99-CL-A05
Shop set, aircraft maintenance, fixed base, hydraulic, Set B, direct support (NSN 4920-00-321-9364)	SC 4920-99-CL-A06

Source: TSARCOM-DRSTS-SLDT

2-53. Shop Sets (Con't).

NOMENCLATURE	SM/SC
Shop set, aircraft maintenance, fixed base, hydraulic, Set C, general support (NSN 4920-00-321-9373)	SC 4920-99-CL-A07
Shop set, aircraft maintenance, fixed base, welding, Set A, direct support (NSN 4920-00-321-9375)	SC 4920-99-CL-A08
Shop set, aircraft maintenance, fixed base, welding, Set B, direct support (NSN 4920-00-321-9376)	SC 4920-99-CL-A09
Shop set, aircraft maintenance, fixed base, welding, Set C, general support (Army) (NSN 4920-00-944-0785)	SC 4920-99-CL-A10
Shop set, aircraft maintenance, fixed base, tool crib, Set A, direct support (NSN 4920-00-321-9397)	SC 4920-99-CL-A11
Shop set, aircraft maintenance, fixed base, tool crib, Set B, direct support (NSN 4920-00-321-9403)	SC 4920-99-CL-A12
Shop set, aircraft maintenance, fixed base, tool crib, Set C, general support (NSN 4920-00-321-9405)	SC 4920-99-CL-A13
Shop set, aircraft maintenance, fixed base, electrical, Set A, direct support (Army) (NSN 4920-00-944-0761)	SC 4920-99-CL-A14
Shop set, aircraft maintenance, fixed base, electrical, Set B, direct support (Army) (NSN 4920-00-944-0760)	SC 4920-99-CL-A15
Shop set, aircraft maintenance, fixed base, electrical, Set C, general support (Army) (NSN 4920-00-944-0757)	SC 4920-99-CL-A16
Shop set, aircraft maintenance, fixed base, flaw detection, Set B, direct support (NSN 4920-00-321-9410)	SC 4920-99-CL-A17
Shop set, aircraft maintenance, fixed base, flaw detection, Set C, general support (NSN 4920-00-321-9411)	SC 4920-99-CL-A18
Shop set, aircraft maintenance, fixed base, paint, Set B, direct support (Army) (NSN 4920-00-944-0759)	SC 4920-99-CL-A19
Shop set, aircraft maintenance, fixed base, paint, Set C, general support (Army) (NSN 4920-00-944-1007)	SC 4920-99-CL-A20
Shop set, aircraft maintenance, fixed base, instrument, Set B, direct support (NSN 4920-00-321-9416)	SC 4920-99-CL-A21

2-53. Shop Sets (Con't).

NOMENCLATURE	SM/SC
Shop set, aircraft maintenance, fixed base, instrument, Set C, general support (Army) (NSN 4920-00-944-0784)	SC 4920-99-CL-A22
Shop set, aircraft maintenance, fixed base, engine, Set B, direct support (Army) (NSN 4920-00-944-0884)	SC 4920-99-CL-A23
Shop set, aircraft maintenance, fixed base, engine, Set C, general support (Army) (NSN 4920-00-944-0786)	SC 4920-99-CL-A24
Shop set, aircraft maintenance, fixed base, propeller and rotor, Set B, direct support (Army) (NSN 4920-00-944-1014)	SC 4920-99-CL-A25
Shop set, aircraft maintenance, fixed base, propeller and rotor, Set C, general support (Army) (NSN 4920-00-944-1015)	SC 4920-99-CL-A26
Shop set, aircraft maintenance, fixed base, power train, general support (Army) (NSN 4920-00-944-0838)	SC 4920-99-CL-A27
Shop set, aircraft maintenance, semitrailer mounted, A-1, tool crib, electrical, flaw detection, direct support (NSN 4920-00-621-2032)	SC 4920-99-CL-A28
Shop set, aircraft maintenance, semitrailer mounted, A-2, sheet metal, welding, hydraulic, direct support (NSN 4920-00-621-2033)	SC 4920-99-CL-A29
Shop set, aircraft maintenance, semitrailer mounted, B-1, tool crib and flaw detection, direct support (NSN 4920-00-621-2034)	SC 4920-99-CL-A30
Shop set, aircraft maintenance, semitrailer and trailer mounted, B-2, electrical, instrument, and hydraulic, direct support (NSN 4920-00-621-2035)	SC 4920-99-CL-A31
Shop set, aircraft maintenance, semitrailer mounted, B-3, sheet metal and welding, direct support (NSN 4920-00-621-2036)	SC 4920-99-CL-A32
Shop set, aircraft maintenance, semitrailer mounted, B-4, machine and engine shop, direct support (NSN 4920-00-621-2037)	SC 4920-99-CL-A33

2-53. Shop Sets (Con't).

NOMENCLATURE	SM/SC
Shop set, aircraft maintenance, trailer mounted, B-6, paint shop, direct support (NSN 4920-00-621-2038)	SC 4920-99-CL-A34
Shop set, aircraft maintenance, semitrailer mounted, C-1, tool crib, general support (NSN 4920-00-621-2039)	SC 4920-99-CL-A35
Shop set, aircraft maintenance, semitrailer and trailer mounted, C-2, electrical shop, general support (NSN 4920-00-621-2040)	SC 4920-99-CL-A36
Shop set, aircraft maintenance, semitrailer mounted, C-3, flaw detection, general support (NSN 4920-00-621-2041)	SC 4920-99-CL-A37
Shop set, aircraft maintenance, semitrailer mounted, C-4, sheet metal, general support (NSN 4920-00-621-2042)	SC 4920-99-CL-A38
Shop set, aircraft maintenance, semitrailer mounted, C-5, welding, general support (NSN 4920-00-621-2043)	SC 4920-99-CL-A39
Shop set, aircraft maintenance, semitrailer mounted, C-6, machine shop, general support (NSN 4920-00-621-2044)	SC 4920-99-CL-A40
Shop set, aircraft maintenance, semitrailer mounted, C-7, engine and hydraulic, general support (NSN 4920-00-621-2045)	SC 4920-97-CL-A41
Shop set, aircraft maintenance, semitrailer mounted, C-8, instrument shop, general support (NSN 4920-00-621-2046)	SC 4920-99-CL-A42
Shop set, aircraft maintenance, trailer mounted, C-10, paint shop, general support (NSN 4920-00-649-7098)	SC 4920-99-CL-A43
Shop set, aircraft maintenance, semitrailer mounted, B-5, propeller and rotor, direct support (NSN 4920-00-649-6509)	SC 4920-97-CL-A44
Shop set, aircraft maintenance, semitrailer mounted, C-9, propeller and rotor, general support (NSN 4920-00-649-6509)	SC 4920-99-CL-A45
Shop set, aircraft maintenance, semitrailer mounted, C-11, power train, general support (NSN 4920-00-649-6510)	SC 4920-99-CL-A46

2-53. Shop Sets (Con't).

NOMENCLATURE	SM/SC
Shop set, aircraft maintenance, airmobile, direct support section, airmobile division (NSN 4920-00-906-9727)	SC 4920-99-CL-A47
Shop set, aircraft maintenance, airmobile, tool crib, direct support maintenance, Battalion set No. 1 (NSN 4920-00-906-9728)	SC 4920-99-CL-A48
Shop set, aircraft maintenance, airmobile, electrical, instrument, hydraulic, direct support maintenance, Battalion set No. 2 (NSN 4920-00-906-9729)	SC 4920-99-CL-A49
Shop set, aircraft maintenance, airmobile, sheet metal and welding, direct support, Battalion set No. 3 (NSN 4920-00-906-9730)	SC 4920-99-CL-A50
Shop set, aircraft maintenance, airmobile, machine and engine, direct support maintenance, Battalion set No. 4 (NSN 4920-00-906-9731)	SC 4920-99-CL-A51
Shop set, aircraft maintenance, airmobile, propeller and rotor, direct support maintenance, Battalion set No. 5 (NSN 4920-00-906-9732)	SC 4920-99-CL-A52
Shop set, aircraft maintenance, airmobile, flaw detection, direct support maintenance, Battalion set No. 6 (NSN 4920-00-906-9733)	SC 4920-99-CL-A53
Shop set, aircraft maintenance, airmobile, company size, direct support, CH-47 (NSN 4920-00-133-8157)	SC 4920-99-CL-A89
Shop set aircraft maintenance, airmobile, company size, direct support, CH-47/OH-6 (NSN 4920-00-133-8156)	SC 4920-99-CL-A89
Shop set, aircraft maintenance, airmobile, company size, direct support, UH-1 (NSN 4920-00-133-8154)	SC 4920-99-CL-A89
Shop set, aircraft maintenance, airmobile, company size, direct support, UH-1/OH-6 (NSN 4920-00-133-8158)	SC 4920-99-CL-A89

2-53. Shop Sets (Con't).

NOMENCLATURE	SM/SC
Shop Set, Aviation Intermediate Maintenance: electrical, instrument, airmobile (NSN 4920-00-165-1453)	SC 4920-99-CL-A91
Shop Set, Aviation Intermediate Maintenance: hydraulic, airmobile (NSN 4920-00-165-1454)	SC 4920-99-CL-A91
Shop Set, Aviation Intermediate Maintenance: machine shop, airmobile (NSN 4920-00-405-9279)	SC 4920-99-CL-A91
Shop Set, Aviation Intermediate Maintenance: power train, airmobile (NSN 4920-00-001-4132)	SC 4920-99-CL-A91
Shop Set, Aviation Intermediate Maintenance: rotor, airmobile (NSN 4920-00-405-9270)	SC 4920-99-CL-A91
Shop Set, Aviation Intermediate Maintenance: sheet metal, airmobile (NSN 4920-00-166-5505)	SC 4920-99-CL-A91
Shop Set, Aviation Intermediate Maintenance: tool crib, airmobile (NSN 4920-00-472-4183)	SC 4920-99-CL-A91
Shop Set, Aviation Intermediate Maintenance: turbine engine, airmobile (NSN 4920-00-224-3684)	SC 4920-99-CL-A91
Shop Set, Aviation Intermediate Maintenance: welding, airmobile (NSN 4920-00-163-5093)	SC 4920-99-CL-A91

2-54. Tool Kits.

NOMENCLATURE	SM/SC
Tool kit, aircraft mechanic's, general (NSN 5180-00-323-4692)	SC 5180-97-CL-A01
Tool kit, airframe repairer: Army aircraft (NSN 5180-00-323-4876)	SC 5180-99-CL-A02
Tool kit, hydraulic repairer, Army aircraft (NSN 5180-00-323-4891)	SC 5180-97-CL-A03
Tool kit, instrument repairer, Army aircraft (NSN 5180-00-323-4913)	SC 5180-99-CL-A05
Tool kit, electrical repairer, Army aircraft (NSN 5180-00-323-4915)	SC 5180-99-CL-A06
Tool kit, power plant: Army aircraft (NSN 5180-00-323-4944)	SC 5180-99-CL-A07
Tool kit, aircraft inspection, technical (NSN 5180-00-323-5114)	SC 5180-97-CL-A09
Tool kit, trainer, flight simulator, set No. 1 (NSN 5180-00-859-0556)	SC 5180-97-CL-A10
Tool kit, Army aircraft, crash investigation (NSN 5180-00-903-1049)	SC 5180-99-CL-A11
Tool kit, powertrain: Army aircraft (NSN 5180-00-003-5267)	SC 5180-99-CL-A13

2-55. Tool Sets.

NOMENCLATURE	SM/SC
Tool Set, Aviation Unit Maintenance, Set No. 1: Airmobile (NSN 4920-00-159-8727)	SC 4920-99-CL-A90
Tool Set, Aviation Unit Maintenance, Set No. 1: Fixed Base (NSN 4920-00-504-9258)	SC 4920-99-CL-A90
Tool Set, Aviation Unit Maintenance, Reciprocating Engine Supplement (NSN 4920-00-159-8728)	SC 4920-99-CL-A90
Tool Set, Aviation Unit Maintenance: company size, Set No. 2, airmobile (NSN 4920-00-567-0476)	SC 4920-99-CL-A92

Section V. INSPECTIONS

2-56. Aircraft Inspections.

Aircraft Phased Maintenance (PM), Special (SP) Inspection Criteria, Time Between Overhaul (TBO) and Retirement Life Schedules are not included in this manual. Refer to the technical publication listed.

AIRCRAFT	TECHNICAL PUBLICATIONS	INSPECTION			
		PM	TBO	RET	SP
UH-1H	TM 55-1520-210-PM	X			
UH-1H/V, EH-1H/X	TM 55-1520-210-23		X	X	X
AH-1G, TH-1G	TM 55-1520-221-PM	X			
AH-1G, TH-1G	TM 55-1520-221-23		X	X	X
AH-1S (ALL)	TM 55-1500-220-PM	X			
AH-1S(MOD)	TM 55-1520-234-23		X	X	X
AH-1S (PROD/ECAS)	TM 55-1520-236-23		X	X	X
AH-1S (MODERNIZED)	TM 55-1520-239-23		X	X	X
CH-47B/C	TM 55-1520-227-PM	X			
CH-47A	TM 55-1520-209-23		X	X	X
CH-47B/C	TM 55-1520-227-23		X	X	X
CH-47D	TM 55-1520-240-PM	X			
CH-47D	TM 55-1520-240-23		X	X	X
CH-47D	TM 55-1520-240-PMS	X			
CH-47D	TM 55-1520-240-23-l thru -10	X			
CH-54A	TM 55-1520-217-23/1		X	X	X
CH-54B	TM 55-1520-217-23/2		X	X	X
OH-6A	TM 55-1520-214-23		X	X	X
AH-64A	TM 55-1520-238-23(DRAFT)		X	X	X
AH-64A	TM 55-1520-238-PM(DRAFT)	X			

2-56. Aircraft Inspections (Con't).

AIRCRAFT	TECHNICAL PUBLICATIONS	INSPECTION			
		PM	TBO	RET	SP
OH-58A/C	TM 55-1520-228-23		X	X	X
OH-58A/C	TM 55-1520-228-PM	X			
UH-1B	TM 55-1520-219-20		X	X	X
UH-1M	TM 55-1520-220-23		X	X	X
UH-1M	TM 55-1520-220-PM	X			
UH-60A	TM 55-1520-237-23		X	X	X
OV-1B/C	TM 55-1510-204-23		X	X	X
OV/RV-1 SERIES	TM 55-1510-217-PM	X			
OV/RV-1D	TM 55-1510-213-23		X	X	X
U-8F	TM 55-1510-201-20		X	X	X
U-21A, RU-21A/D	TM 55-1510-209-23		X	X	X
U-21/RU-21	TM 55-1510-200-PM	X			
RU-21B/C	TM 55-1510-214-23		X	X	X
RU-21H	TM 55-1510-215-23		X	X	X

Source: TSARCOM-DRSTS-MEM

Section VI. FUEL AND OIL

2-57. Fuel and Oil Costs (FY 78).

TYPE AIRCRAFT	FUEL		OIL	
	GRADE 1/	COST PER GAL 2/	MIL-L-SPECIFICATION 1/	COST PER QT 3/
AH-1G/S	JP-4/5	1.17/1.26	7808/23699	2.99
CH-47A	JP-4	1.17	23699	2.99
CH-47B	JP-4/5	1.17/1.26	23699	2.99
CH-47C/D	JP-4/5	1.17/1.26	23699	2.99
CH-54A	JP-4/5	1.17/1.26	23699	2.99
CH-54B	JP-4/5	1.17/1.26	23699	2.99
OH-6A	JP-4	1.17	23699	2.99
OH-58A/C	JP-4	1.17	23699	2.99
UH-1B	JP-4/5	1.17/1.26	23699	2.99
UH-1H/M/V	JP-4	1.17	23699	2.99
EH-1H/EH-1X				
TH-55A	115/145	1.51	22851	1.10
U-8F	115/145	1.51	22851	1.10
U-10A	115/145	1.51	22851	1.10
U-21A	JP-4/5	1.17/1.26	23699	2.99
RU-21A	JP-4/5	1.17/1.26	23699	2.99
RU-21B	JP-4/5	1.17/1.26	23699	2.99
RU-21C	JP-4/5	1.17/1.26	23699	2.99
RU-21D	JP-4/5	1.17/1.26	23699	2.99
U-21G	JP-4/5	1.17/1.26	23699	2.99
RU-21E	JP-4/5	1.17/1.26	23699	2.99
U-21F	JP-4/5	1.17/1.26	23699	2.99
RU-21J	JP-4/5	1.17/1.26	23699	2.99
RU-21H	JP-4/5	1.17/1.26	23699	2.99
OV-1B	JP-4/5	1.17/1.26	23699	2.99
OV-1C(w/L-15)	JP-4/5	1.17/1.26	23699	2.99
OV-1D	JP-4/5	1.17/1.26	23699	2.99
T-41B	115/145	1.51	22851	1.10
T-42A	115/145	1.51	22851	1.10
C-12A	JP-4/5	1.17/1.26	23699	2.99
UV-18A	JP-4/5	1.17/1.26	23699	2.99
UH-60A	JP-4/5	1.17/1.26	23699	2.99
AH-64A	JP-4/5	1.17/1.26	23699	2.99

2-57. Fuel and Oil Costs (FY 78) (Con't).

DATA SOURCE: 1/ TB 55-9150-200-25, Engine and Transmission Oils, Fuels and Additives for Army Aircraft.

2/ DFSC Price Bulletin No. 80-1 Standard Prices of Bulk Petroleum Items.

3/ Federal Supply Catalog, C-ML-A, Army Management Data List, and Defense General Supply Center.

Note: The above costs are subject to frequent change and should be used for planning only.

SOURCE: GMPA-STSGP-FM
AV 977-6752/6758

2-58. Fuel and Oil Consumption.

TYPE OF AIRCRAFT	NUMBER OF ENGINES	ENGINE MODEL	DESIGN POWER PER ENGINE (SHP) MAXIMUM	NORMAL	CRUISE[1]	DRIVE TRAIN LIMIT SHP	FUEL CONSUMPTION GAL PER AIRCRAFT HR MAXIMUM	NORMAL	CRUISE	OIL CONSUMPTION QTS PER AIRCRAFT HR
AH-1S	1	**T53-L-703**	**1485**	**1300**	**1125**	**1290 3/**	**109.2 4/**	**109.2 4/**	**100.8 4/**	**0.56**
AH-1G	1	T53-L-13B	1400	1250	937.5	1100	**101.5 5/**	**101.5 5/**	**5/ 93.1**	0.56
CH-47A	2	T55-L-7	2650	2200	1650.0	5200	482.0	407.8	305.9	1.60
CH-47B	2	T55-L-7C	2850	2400	1800.0	5200	478.8	442.0	331.5	1.60
CH-47C	2	T55-L-11A	3750	3000	2250.0	6000	497.1	497.1	372.8	1.60
CH-47D	**2**	**T55-L-712**	**4500**	**3750**	**2813.0**	**7500**	**625.0**	**507.0**	**380.8**	**1.60**
CH-54A	2	T73-P-1	4500	4000	3000.0	5400	656.7	656.7	555.2 2/	1.04
CH-54B	2	T73-P-700	4800	4430	3322.5	6600	716.4	716.4	597.1 2/	1.04
OH-6A	1	T63-A-5A/700	317	270	202.5	250	29.0	29.0	17.6	0.20
OH-58A/C	1	T63-700	317	270	202.5	317	33.7	29.1	23.6	0.20
UH-1B	1	T53-L-11D	1100	900	675.0	1100	114.5	96.5	78.5	0.56
UH-1H/M/V	1	T53-L-13B	1400	1250	937.5	1100	106.0	106.0	93.1	0.56
EH-1H/EH-1X										
U-21A	2	T74-CP-700	550	495	371.3		115.4	107.0	80.2	0.20
RU-21A	2	T74-CP-700	550	495	371.3		115.4	107.0	80.2	0.20
RU-21B	2	T74-CP-702	750	688	516.0	620	117.1	117.1	97.5	0.20
RU-21C	2	T74-CP-702	750	688	516.0	620	117.1	117.1	97.5	0.20
RU-21D	2	T74-CP-700	550	495	371.3		115.4	107.0	80.2	0.20
U-21G	2	T74-CP-700	550	495	371.3		115.4	107.0	80.2	0.20
RU-21H	2	T74-CP-700	550	495	371.3		115.4	107.0	80.2	0.20
U-21F	2	PT6A-28	680	620	465.0		128.1	117.1	89.1	0.20
OV-1B	2	T53-L-7	1100	900	675.0		225.0	190.1	139.2	1.12
OV-1C	2	T53-L-15	1150	1000	750.0		219.6	198.5	148.5	1.12
OV-1D	2	T53-L-701	1400	1250	937.5		252.2	232.8	174.6	1.12

1/ Cruise = 75% Normal

2/ Based on 75% Drive Train Limit

3/ 30 Min.

4/ **Eight Tow Missiles**
2,000 Ft. Pressure Altitude
9,000 Lbs. Gross Weight

5/ **Hog Mission**
2,000 Ft. Pressure Altitude
9,000 Lbs. Gross Weight

2-58. Fuel and Oil Consumption (Con't).

TYPE OF AIRCRAFT	NUMBER OF ENGINES	ENGINE MODEL	DESIGN POWER PER ENGINE (BHP) MAXIMUM	NORMAL	CRUISE [1]	FUEL CONSUMPTION GAL PER AIRCRAFT HR MAXIMUM	NORMAL	CRUISE	OIL CONSUMPTION QTS PER AIRCRAFT HR
AH-64A	2	T700-GE701	3/ 1694	4/ 1414	5/ 1414	–	6/ 136.5	–	0.34
TH-55	1	H10-360-B1A	180	160	120.0	15.1	13.4	10.1	0.17
U-8F	2	0-480-3A	340	320	240.0	60.5	56.8	42.6	0.50
U-10A	1	GO-480-G1D6	340	320	240.0	30.2	28.4	20.1	0.25
T-41B	1	IO-360-D	210	210	157.5	15.5	15.5	11.6	0.25
T-42A	2	IO-470-L	260	260	195.0	39.2	39.2	29.4	0.50
C-12A	2	PT-6-38	2/ 750	–	–	115.4	107.0	80.2	0.20
UV-18A	2	–	–	–	–	–	–	–	–
UH-60A	2	T700-GE700	–	4/ 1546	5/ 1311	–	22.4	156	0.33

1/ Cruise = 75% Normal

2/ Shaft Horsepower

3/ Contingency (single engine condition only — 1723)

4/ Intermediate Rated Power (Transmission Limits)

5/ Max. Continuous

6/ Primary Mission Fuel Consumption

Source: DARCOM PM'S
TSARCOM RPO'S and PM'S

Section VII. MAINTENANCE MAN-HOURS

2-59. Total Direct Productive Man-Hours Per Flight Hour.

TYPE AIRCRAFT	AVIATION UNIT MAINTENANCE (AVUM) 1/	AVIATION INTERMEDIATE MAINTENANCE (AVIM) 2/	TOTAL
AH-64 3/			
AH-1G	2.94	1.0	3.94
AH-1S(series)	3.50	1.11	4.61
CH-47A/B	7.99	3.80	11.79
CH-47C	9.20	4.30	13.50
CH-47D	10.83	4.27	15.10
CH-54	16.21	3.89	20.10
OH-6A	2.84	1.01	3.85
OH-58A	2.12	.60	2.72
OH-58C	1.98	.55	2.53
UH-1B/C/D /M/V	2.85	1.06	3.91
EH-1X	2.85	1.06	3.91
UH/EH-1H	2.85	1.06	3.91
UH/EH-60A	1.91	.54	2.45
T-41B	2.93	1.78	4.71
OV-1B/C/D	4.22	1.23	5.45
RV-1D	4.22	1.23	5.45
U-21/RU-21	4.02	1.11	5.13

1/ AVUM is that organizational and integrated Direct Support Maintenance performed in company sized aviation units (10 or more aircraft).

2/ AVIM is the amalgamation of direct and general support aviation maintenance units into a single maintenance unit performing both direct and general support aircraft maintenance.

3/ Direct productive maintenance manhour per flight hour are currently being developed for the TOE MACRIT and are not yet available.

NOTE: The above factors are direct productive man-hours only and are based on TOE Manpower Authorization Criteria (MACRIT). To include indirect productive man- hours multiply Dir Maintenance Man-Hours by 1.40.

REFERENCE: AR 570-2 /change
TSARCOM-DRSTS-MPSD

2-60. Direct Productive Maintenance Man-Hours 1/ Per Flight Hour for Technical Inspectors.

TYPE AIRCRAFT	MOS	AVIATION UNIT MAINTENANCE (AVUM)	AVIATION INTERMEDIATE MAINTENANCE (AVIM)
AH-64 2/	66R		
AH-1G	66Y	.26	.12
AH-1S(Series)	66Y	.21	.12
CH-47A/B	66U	.39	.19
CH-47C	66U	.64	.19
CH-47D	66U	1.5	0.30
CH-54A/B	66X	2.20	.38
OH-6A	66V	.35	.08
OH-58A	66V	.13	.05
OH-58C	66V	.12	.05
UH-1B/C/ D /M/V	66N	.28	.15
EH-1X	66N	.28	.15
UH/EH-1H	66N	.28	.15
UH/EH-60A	66T	.21	.03
OV-1B/C/D	66H	.25	.14
RV-1D	66H	.25	.14
U-21/RU-21	66G	.37	.06
T-41B	—	—	—

1/ To include indirect productive man-hours multiply direct maintenance man-hours by 1.40.

2/ Man-hour factor not available.

2-61. Manpower Authorization Criteria (MACRIT).

AIRCRAFT MAINTENANCE AND
TECHNICAL INSPECTION OPERATIONS
(MOS 67/68 SERIES)

AIRCRAFT MAINTENANCE AND
TECHNICAL INSPECTION OPERATION
(MOS 67/68 SERIES)

1. Productive man-Hours. Ref AR570-2
2. Authorization formula and criteria.
   a. Aviation Unit Maintenance (AVUM).

(1) Density of Aircraft by Type X MACRIT Factor by MOS = Number Positions Authorized
(1 to 9 Aircraft Category 1) USE TABLE I ONLY - MOS 67 Series

(2) Density of Aircraft by Type X MACRIT Factor by MOS = Number Positions Authorized
(10 or more aircraft Category I) USE TABLES I AND Ia - MOS 67/68 Series

(3) Density of Aircraft by Type X MACRIT Factor by MOS = Number Positions Authorized
(1 to 9 Aircraft Category II) USE TABLE II ONLY - MOS 67 Series

(4) Density of Aircraft by Type X MACRIT Factor by MOS = Number Positions Authorzied
(10 or more Aircraft Category II) USE TABLES II AND IIa - MOS 67/68 Series

   b. Aviation Intermediate Maintenance (AVIM).

Density of Aircraft by Type X MACRIT Factor by MOS = Number Positions Authorized
(Table III Category 1I) (MOS 67 and 68 Series)

3. For force developers who utilize Annual Available Productive Man-hour (AAPMH) other than those listed in paragraph 2-7b(3). AR570-2 and/or Flying Hours as listed in Table IV. Column A below, substitute appropriate AAPMH and/or Flying Hours requirements in the following authorization formulae and criteria.

   a. Aircraft Repairer (with FLYING CREWCHIEF) (MOS 67 Series).

STEP 1: Maintenance man-hours/ flight hour (Table V) X Annual flying hours (Table IV) or other source 2 − .50 Annual Available 1 productive man-hours by category or other source 3 ÷ Annual Available productive man-hours by category or other source 3 = MACRIT Factor by MOS

STEP 2: Density of Aircraft by Type X MACRIT Fsctor (From Step 1 above) = Number Positions plus Number Positions plus one Crewchief per Aircraft

b. AVUM: Aircraft Repairer without crewchiefs (MOS 67 Series).[5]

Density of Aircraft by Type	X	Maintenance man-hours/ flight hour (Table V)	X	Annual flying hours (Table IV) or other source[2]	÷	Annual Available productive man-hours by category or other source[3]	=	Number Poaitiona Authorized

c. AVUM: Aircraft Component Repairer (MOS 68 Series).

Density[4] of Aircraft by type	X	Maintenance man-hours/ flight hour (Table VI)	X	Annual flying hours (Table IV) or other source[2]	÷	Annual Available productive man-hours by category or other source[3]	=	Number Poaitiona Authorized

d. AVIM: Aircraft & Aircraft Component Repair (MOS 67 &68 Series).

Density of Aircraft by type	X	Maintenance man-hours/ flight hour (Table Vl)	X	Annual flying hours (Table IV) or other source[2]	÷	Annual Available productive man-hours by category or other source[3]	=	Number Positions Authorized

e. TECHNICAL INSPECTORS: (MOS 67 Series only).

Density of Aircraft by type	X	Maintensnce man-hours/ flight hour (Table VII)	X	Annual flying hours (Table IV) or other source[2]	÷	Annual Available productive man-hours by category or other source[3]	=	Number Positions Authorized

NOTE 1: Flying crewchiefs are 35 percent productive directive/non-flying crewchiefs are 50 percent projective direct
NOTE 2: Use the flying hours listed in Table IV (Column B) or those documented flight hours necessary to accomplish the mission.
NOTE 3: Substitutions may be made when the AAPMH figures vary from those listed in paragraph 2-7b(3), AR570-2
NOTE 4: Only those units with 10 or more aircraft will be authorized MOS 68 Series.
NOTE 5: Aircraft OV-1B/C/D, U-21A, OH-6A, OH-58A, and AH-1G/S are not authorized flying crew chief. Nonflying crew chief's positions may be designated from within the authorized position computation.

SAMPLE COMPUTATIONS *(For units flying hours and/or AAPMH other than those in this regulation, see paragraph 3 above).*

1. AVUM: Aircraft Repairer (with FLYING CREWCHIEF) (MOS 67 Series).

ASSUME 13 UH-1H, annual flying hours = 100; and 2300 AAPMH.

STEP 1:

	Maintenance man-hours/ flight hour (Table V)		Annual flying hours (Table IV) or other source[2]		.50 Annual Available productive man-hours by category or other source[3]		Annual Available productive man-hours by category or other source[3] = MACRIT FACTOR
	4.12	X	1000	—	1150	÷	2300 = 1.29

STEP 2:

Density of Aircraft by Type		MACRIT Factor by MOS		Number Positions	+	One Crewchief per Aircraft	=	Total (67N) Positions Authorized
13	X	1.29	=	16.77	+	13	=	29.97 or30

2. AVUM: Aircraft Repairer (without crewchief) (MOS 67 Series).

ASSUME 17 AH-1S, annual flying hours = 500 and 2600 AAPMH.

Density of Aircraft by type		Maintenance man-hours/ flight hour (Table V)		Annual flying hours (Table IV) or other source[2]		Annual Available productive man-hours by category or other source[3]		Number (67Y) Positions Authorized
17	X	4.93	X	500	÷	2600	=	16.11 or 16

3. Aircraft Component Repairer Computation for AVIM and AVUM (with 10 or more aircraft) are the same aa SAMPLE COMPUTATION 2, above.

MACRIT FACTORS[2]

AVIATION UNIT MAINTENANCE (AVUM)

TABLE I (MOS 67 SERIES)
Category I Unit (2500 AAPMH)

LIN	A30221	A30271 A30296	A30946	K31749[1] K31804	K31795[1]	K30378[1]	K30383[1]	K30449[1]	K30645	K31042	K30515[1] K30516	K29660 K29694
AIRCRAFT	OV-1S	OV-1C/D	U-21A	UH-1B/M	UH-1H	CH-47A	CH-47S	CH-47C	OH-6A	OH-58A	CH-54A/B	AH-1G/S
AIRPLANE REPAIRER (67G)	1.75	1.85	1.78									
UTILITY HELICOPTER REPAIRER (67N)				1.65	2.06							
MEDIUM CARGO HELICOPTER REPAIRER (67U)						5.17	4.78	4.96				
OBSERVATION HELICOPTER REPAIRER (67V)									1.06	1.05		
HEAVY CARGO HELICOPTER REPAIRER (67X)											4.81	
ATTACK HELICOPTER REPAIRER (67Y)												1.54
AIRPLANE INSPECTOR (67G)	.21	.21	.18									
UTILITY HELICOPTER INSPECTOR (67N)				.17	.27							
MEDIUM CARGO HELICOPTER INSPECTOR (67U)						.79	.79	.79				
OBSERVATION HELICOPTER INSPECTOR (67V)									.16	.16		
HEAVY CARGO HELICOPTER INSPECTOR (67X)											.64	
ATTACK HELICOPTER INSPECTOR (67Y)												.20

NOTE 1: INCLUDES ONE FLYING CREWCHIEF PER AIRCRAFT
NOTE 2: IN UNITS WITH 10 OR MORE AIRCRAFT, FOR POSITIONS NOT JUSTIFIED BY MACRIT BUT ESSENTIAL FOR THE OPERATION OF THE UNIT, A TRADE-OFF IS AUTHORIZED AS LONG AS TOTAL AUTHORIZATION FOR POSITIONS IS NOT EXCEEDED.

TABLE Ia (MOS 68 SERIES)
Category I Unit (2500 AAPMH)

AIRCRAFT POWERPLANT REPAIRER (68S)	.06		.04	.02		.05	.07		.11	.10		.11	.05		.03	.09		.07
AIRCRAFT POWERTRAIN REPAIRER (68D)	.02		.02	.02		.06	.05		.32	.24		.37	.06		.04	.10		.07
AIRCRAFT ELECTRICIAN (68F)	.04		.02	.04		.01	.02		.11	.10		.11	.03		.01	.09		.02
AIRCRAFT STRUCTURAL REPAIRER (68G)	.12		.12	.12		.05	.07		.11	.10		.16	.09		.16	.05		.05
AIRCRAFT PNEUDRAULICS REPAIRER (68H)	.02		.04	.02		.01	.02		.05	.04		.05	NONE		.01	.05		.02

MACRIT FACTORS[2]

AVIATION UNIT MAINTENANCE (AVUM)

TABLE II (MOS 67 SERIES)

Category II Unit (2700 AAPMH)

LIN	A30221	A30271 A30296	A30946	K31749[1] K31804	K31795[1]	K30378[1]	K30383[1]	K30449[1]	K30645	K31042	K30515[1] K30516	K29660 K29694
AIRCRAFT	OV-1B	OV-1C/D	U-21A	UH-1B M	UH-1H	CH-47A	CH-47B	CH-47C	OH-6A	OH-58A	CH-54A/B	AH-1G/S
AIRPLANE REPAIRER (67G)	1.62	1.71	1.65									
UTILITY HELICOPTER REPAIRER (67N)				1.56	1.95							
MEDIUM CARGO HELICOPTER REPAIRER (67U)						4.62	4.46	4.63				
OBSERVATION HELICOPTER REPAIRER (67V)									1.00	1.00		
HEAVY CARGO HELICOPTER REPAIRER (67X)											4.49	
ATTACK HELICOPTER REPAIRER (67Y)												1.42
AIRPLANE INSPECTOR (67G)	.19	.19	.17									
UTILITY HELICOPTER INSPECTOR (67N)				.16	.25							
MEDIUM CARGO HELICOPTER INSPECTOR (67U)						.73	.73	.73				
OBSERVATION HELICOPTER INSPECTOR (67V)									.15	.15		
HEAVY CARGO HELICOPTER INSPECTOR (67X)											.59	
ATTACK HELICOPTER INSPECTOR (67Y)												.19

NOTE 1. INCLUDES ONE FLYING CREWCHIEF PER AIRCRAFT.
NOTE 2 IN UNITS WITH 10 OR MORE AIRCRAFT, FOR POSITIONS NOT JUSTIFIED BY MACRIT BUT ESSENTIAL FOR THE OPERATION OF THE UNIT, A TRADE-OFF IS AUTHORIZED AS LONG AS TOTAL AUTHORIZATION FOR POSITIONS IS NOT EXCEEDED

TABLE IIa (MOS 68 SERIES)
Category II Unit (2700 AAPMH)

AIRCRAFT POWERPLANT REPAIRER (68B)	05		04	02		05	07		.10	09		10	05		03	09		.06
AIRCRAFT POWERTRAIN REPAIRER (68D)	.02		02	02		05	.05		30	22		.34	06		04	09		07
AIRCRAFT ELECTRICIAN (68F)	04		.02	04		01	01		10	09		10	03		01	.09		.02
AIRCRAFT STRUCTURAL REPAIRER (68G)	11		12	.11		05	07		10	09		14	.08		14	04		05
AIRCRAFT PNEUDRAULICS REPAIRER (68H)	02		04	.02		01	01		05	03		05	NONE		01	04		02

MACRIT FACTORS[1]
AVIATION INTERMEDIATE MAINTENANCE (AVIM)
TABLE III
Category 11 Unit (2700 AAPMH)

LIN	A30221	A30271 A30296	A30946	K31749 K31604	K31795	K30376	K30363	K30449	K30645	K31042	K30515 K30516	K29660 K29694
AIRCRAFT	OV-1B	OV-1C/D	U-21A	UH-1B/M	UH-1H	CH-47A	CH-47B	CH-47C	OH-6A	OH-58A	CH-54A/B	AH-1G/S
AIRPLANE REPAIRER (67G/67H)	.26	.29	.27									
UTILITY HELICOPTER REPAIRER (67N)				26	.32							
MEDIUM CARGO HELICOPTER REPAIRER (67U)						99	.76	1.14				
OBSERVATION HELICOPTER REPAIRER (67V)									24	.24		
HEAVY CARGO HELICOPTER REPAIRER (67X)											54	
ATTACK HELICOPTER REPAIRER (67Y)												27
AIRCRAFT POWERPLANT REPAIRER (68B)	.05	.06	.04	.09	.10	.29	.25	.35	.03	.17	.10	.09
AIRCRAFT POWERTRAIN REPAIRER (68D)	.01	.01	.04	.05	.06	.27	.20	.29	.06	.03	.05	.06
AIRCRAFT ELECTRICIAN (68F)	.01	.01	.06	.01	.01	.12	.09	.09	.01	.01	.14	.02
AIRCRAFT STRUCTURAL REPAIRER (68G)	.17	.19	.10	.09	.11	.19	.16	.24	.06	.12	.13	.09
AIRCRAFT PNEUDRAULICS REPAIRER (68H)	.01	.01	.02	.01	.01	.06.	.06	.09	None	.01	.08	.01
AIRPLANE INSPECTOR (66G)	.05	.05	.03									
UTILITY HELICOPTER INSPECTOR (66N)				.07	.07							
MEDIUM CARGO HELICOPTER INSPECTOR (66U)						.16	.16	.16				
OBSERVATION HELICOPTER INSPECTOR (66V)									.03	.03		
HEAVY CARGO HELICOPTER INSPECTOR (66X)											10	
ATTACK HELICOPTER (66Y)												.05

NOTE 1: FOR POSITIONS NOT JUSTIFIED BY MACRIT, BUT ESSENTIAL FOR THE OPERATION OF THE UNIT, A TRADE-OFF IS AUTHORIZED AS LONG AS TOTAL AUTHORIZATION FOR POSITIONS IS NOT EXCEEDED.

TABLE IV
FLYING HOURS DA APPROVED FLYING HOUR FACTORS

LIN	AIRCRAFT	COLUMN A: TOE ACTIVE COMBAT ENVIRONMENT HOURS PER: MONTH	COLUMN A: TOE ACTIVE COMBAT ENVIRONMENT HOURS PER: YEAR	Column B: INDIRECT SUPPORT AIRCRAFT HOUR PER: MONTH	Column B: INDIRECT SUPPORT AIRCRAFT HOUR PER: YEAR
K29660 K29694	AH-1G/S	65	780	—	—
K30378 K30383 K30499 H30517	CH-47A/B/C/D	56	696	25	300
K31749 K31804	UH-1B/M	55	660	25	300
K31795	UH-1H	79	948	25	300
K32293	UH-60A	76	912	35	420
K30515 K30516	CH-54A/B	43	516	25	300
K30645	OH-6A	68	616	25	300
K31042	OH-58A	68	616	25	300
A30221 A30271 A30296	OV-1B/C/D	56	696	—	—
A30946	U-21A	74	888	35	420

NOTE: Indirect support flying hours, Column B above, are applicable to those units (excluding divisional units) that are not directly or titally relatable to combat operations. Applicable to MTOE when directed by the MACOM

2-62. Aviation Intermediate Maintenance (AVIM) Support Units.

UNIT		Productive Maintenance Man-Hours Per Year (Based on 2700 Hr Production/Man/Year)	
TOE 55-407	Transportation Aircraft Maintenance Company Transportation Aircraft Maintenance Battalion Air Assault Division	135,000 151,000 27,000 32,400 64,800	Aircraft Component Repair Aircraft Repair Aircraft Weapons System Repair Aircraft Fire Control Repair Avionics Repair
TOE 55-417	Transportation Aircraft Maintenance Company Support Battalion Air Cavalry Combat Brigade	297,000 321,300 91,800 91,800 18,900	Aircraft Component Repair Aircraft Repair Aircraft Weapon System Repair Aircraft Fire Control Repair Avionics Repair
TOE 55-427 (NOTE B)	Transportation Aircraft Maintenance Company Combat Aviation Battalion Armored Division or Infantry Division (Mech)	105,300 108,000 32,400 32,400 54,000	Aircraft Component Repair Aircraft Repair Aircraft Weapon System Repair Aircraft Fire Control Repair Avionics Repair
TOE 55-427	Transportation Aircraft Maintenance Company Combat Aviation Battalion Infantry Division or Airborne Division	126,900 137,700 32,400 32,400 64,800	Aircraft Component Repair Aircraft Repair Aircraft Weapons System Repair Aircraft Fire Control Repair Avionics Repair
TOE 55-427	Transportation Aircraft Maintenance Company Combat Support Aviation Battalion Combat Brigade Air Assault	83,700 81,000 27,000 35,100 43,200	Aircraft Component Repair Aircraft Repair Aircraft Weapon System Repair Aircraft Fire Control Repair Avionics Repair
TOE 55-427	UH-60 (Augmentation)	16,200 16,200 8,100	Aircraft Component Repair Aircraft Repair Avionics Repair

2-62. Aviation Intermediate Maintenance (AVIM) Support Units (Con't).

UNIT		Productive Maintenance Man-Hours Per Year (Based on 2700 Hr Production/Man/Year)	
TOE 55-427	UH-1 (Augmentation)	18,900 16,200 8,100	Aircraft Component Repair Aircraft Repair Avionics Repair
TOE 55-459	Transportation Aircraft Intermediate Maintenance Support Company	202,500 145,800 24,300 24,300 70,200	Aircraft Component Repair Aircraft Repair Aircraft Weapon System Repair Aircraft Fire Control Repair Avionics Repair
TOE 55-459	Heavy Helicopter (CH-54) Section (Augmentation)	8,100 16,200	Aircraft Component Repair Aircraft Repair
TOE 55-459	Fixed Wing Section (Augmentation)	16,200 24,300	Aircraft Component Repair Aircraft Repair
TOE 55-459	Avionics Section (Augmentation)	45,900	Avionics Repair

SOURCE: TSARCOM DRSTS-SPME

Section VIII. MAINTENANCE CATEGORIES

2-63. Categories of Maintenance. categories of maintenance are:

a. Aviation Unit Maintenance (AVUM). This level includes all of the original organizational maintenance tasks plus some of the prior direct support maintenance tasks. It is that maintenance which is organic to the operating unit.

b. Aviation Intermediate Maintenance (AVIM). This level of maintenance combines the remaining portions of capability of the prior direct and general support maintenance, thereby establishing a single level of support between AVUM and the depot.

c. Aviation Overhaul Maintenance (Depot). This level of maintenance provides for the repair/overhaul of materiel beyond the capability of AVUM/AVIM.

Reference AR 750-1.

NOTE: The three level maintenance concept replaces the previous four level maintenance categories of organization, direct support, general support and depot.

2-64. Aircraft Overhaul/Repair and Modification Facilities.

ARMY DEPOT	LOCATION	TYPE AIRCRAFT
Corpus Christi (CCAD)	Corpus Christi, Texas	AH-1 Series UH-1 Series OH-6A Crash Damage OH-58A/C Crash Damage
New Cumberland (NCAD)	Harrisburg, Pa.	CH-47 Series (Modification)

NOTE: Aircraft not maintained at CCAD and NCAD are contractor supported.

SOURCE: TSARCOM-DRSTS-MPP

Section IX. SURVIVAL EQUIPMENT

2-65. Survival Kits for Aviation Operations.

Survival Kit, Individual: hot climate (NSN 1680-00-973-1861)	SC 1680-97-CL-A02
Survival Kit, Individual: cold climate (NSN 1680-00-973-1862)	SC 1680-97-CL-A03
Survival Kit, Individual: Over-water NSN 1680-00-973-1863)	SC 1680-97-CL-A04
Survival Kit, Individual Vest: large (NSN 1680-00-205-0474)	SC 1680-97-CL-A07
Survival Kit, Individual Vest: small (NSN 1680-00-187-5716)	SC 1680-97-CL-A07
Survival Kit Seat: Aircraft cold climate (NSN 1680-00-148-9233)	SC 1680-97-CL-A08-HR
Survival Kit Seat: Aircraft hot climate (NSN 1680-00-148-9234)	SC 1680-97-CL-A08-HR
Survival Kit Seat: Aircraft Over-water (NSN 1680-00-140-3540)	SC 1680-97-CL-A08-HR

CHAPTER 3

PERSONNEL REQUIREMENTS

Section I. OFFICE/WARRANT OFFICER AVIATION PERSONNEL REQUIREMENTS

3-1. Officer/Warrant Officer Requirements.

AR 570-1 contains criteria for, and lists positions where commissioned officers are authorized. Under these criteria, positions entailing essential command, staff, or supervisory functions for which an officer is especially required are so designated. All other positions are designated as warrant officer.

3-2. Cockpit Seat Fill Requirements.

Cockpit seat fill requirements vary with the type of aircraft and the mission of the unit. At least the minimum crew complement prescribed in the operations handbook for a particular aircraft is authorized except for proficiency, contractor operated, and maintenance float aircraft for which no Army aviators are programmed. In general, dual control aircraft in combat, combat support units, and indirect support units will be manned with pilots and copilots to give the unit a sustained operational capability. Dual control aircraft assigned in certain indirect support categories may not require copilots unless flight must be performed under instrument conditions.

Section II. ENLISTED AVIATION MAINTENANCE PERSONNEL REQUIREMENTS

3-3. Enlisted Personnel Requirement.

a. AR 570-2 provides staff officers and aircraft maintenance officers with uniform guidance to accomplish the following:

(1) Evaluate manpower requirements for TOE/TD units as pertains to user and support maintenance activities.

(2) Determine manpower requirements in connection with procurement of aircraft maintenance services.

b. A relationship exists between the flying hours accumulated on aircraft and the man-hours of maintenance required for its continued serviceability. The relationship is termed man-hour per flight-hour ratio (MH/FH) and prevails in both user and support level maintenance. The ratio varies by type and model of aircraft, depending on aircraft size and complexity.

3-4. Enlisted MOS Applicable to Aircraft Types.

Current MOS	Description	Category		Aircraft Applicable
		AVUM	AVIM	
26E	Aerial Surveillance Sensor Repairer		X	OV-1D
26K	Aerial Electronic Warning/Defense Equipment Repairer	X	X	All
26M	Aerial Surveillance Radar Repairer		X	OV-1B
26N	Aerial Surveillance Infrared Repairer		X	OV-1C
35K	Avionic Mechanic	X	X	All
35L	Avionic Communications Equipment Repairer		X	All
35M	Avionic Navigation and Flight Control Equipment Repairer		X	All
35P	Avionic Equipment Maintenance Supervisor		X	All
35R	Avionic Special Equipment Repairer		X	All
41G	Aerial Surveillance Photographic Equipment Repairer		X	OV-1B/C
66G	Technical Inspector	X	X	See Note 3
67G	Airplane Repairer, Utility/Cargo	X	X	U-8, U-21
67H	Observation Airplane Repairer	X	X	OV-1(series)
67N	Utility Helicopter Repairer	X	X	UH-1(series)
67R	Attach Helicopter Repairer	X	X	AH-64
67S	Scout Helicopter Repairer	X	X	OH-58D
67T	Tactical Transport Helicopter Repairer	X	X	UH-60A
67U	Medium Helicopter Repairer	X	X	CH-47(series)
67V	Observation Helicopter Repairer	X	X	OH-6A, OH-58A/C
67X	Heavy Lift Helicopter Repairer	X	X	CH-54(series)
67Y	Attack Helicopter Repairer	X	X	AH-1(series)
67Z	Aircraft Maintenance Senior Sergeant	X	X	All
68B	Aircraft Powerplant Repairer	X	X	All
68D	Aircraft Powertrain Repairer	X	X	All
68F	Aircraft Electrician	X	X	All
68G	Aircraft Structural Repairer	X	X	All
68H	Aircraft Pneudraulics Repairer	X	X	All
68J	Aircraft Fire Control Repairer	X	X	All RW
68K	Aircraft Component Repair Supervisor		X	All
68M	Aircraft Weapons Systems Repairer	X	X	All RW

Reference: CMF 28 and 67, AR 611-201.

NOTE: 1. MOS 13T /ASI P9 has been tentatively identified as the Remotely Piloted Vehicle Repairer.

2. Contract maintennce is utilized to support the C-12A, however, MOS 67G may be utilized as a flying crew chief.

3. Fixed and Rotary Wing Technical Inspector MOS's are changed to 66 followed by applicable letter code to designate utilization; i.e., 66T (UH-60), 66N (UH-1), 66R (AH-64), 66G (U-21), and 66J (Aircraft Armament).

SOURCE: DRSTS-MPSD

CHAPTER 4
COSTS

Section I. AIRCRAFT UNIT PRICES

4-1. Rotary Wing Unit Price.

AIRCRAFT	NATIONAL STOCK NUMBER	LINE ITEM NUMBER	TYPE	STANDARD PRICE*
AH-1G 1/	1520-00-999-9821	K29660	Attack	509,833
TH-1G 2/	1520-00-804-3635	K29762	Trainer	531,679
CH-47A	1520-00-633-6836	K30378	Cargo Transport	990,717
CH-47B	1520-00-990-2941	K30383	Cargo Transport	1,063,448
CH-47C	1520-00-871-7308	K30449	Cargo Transport	4,184,478
CH-47D	1520-01-088-3669	H30517	Cargo Transport	SEE 6/
CH-54A 3/	1520-00-964-9601	K30515	Cargo Transport	2,847,303
CH-54B	1520-00-113-5776	K30516	Cargo Transport	3,014,803
OH-6A	1520-00-918-1523	K30645	Observation	140,450
OH-58A	1520-00-169-7137	K31042	Observation	143,782
OH-58C	1520-01-020-4216	H31110	Observation	201,898
UH-1C	1520-00-977-8862	K31767	Utility	224,415
UH-1D	1520-00-859-2670	K31786	Utility	237,405
UH-1V	1520-01-043-4949	H31872	Utility/Med Evac	1,763,000
UH-1H	1520-00-087-7637	K31795	Utility	1,763,000
EH-1H	1520-00-368-8442	K30548	Utility/Quick Fix	1,920,000
UH-1M	1520-00-809-2631	K31804	Utility	247,758
EH-1X	1520-01-042-9396	H30829	Utility/Quick Fix	1,920,000
TH-55A	1520-00-758-0289	K31153	Primary Trainer	35,590
AH-1S 4/ 5/	1520-00-504-9112	K29694	Attack	See 4/ 5/
UH-60A	1520-01-035-0266	K32293	Utility	2,282,200
AH-64A	1520-01-106-9519	H28647	Attack	—

*Published in DA Supply Bulletin 700-20, effective 1 Sep 80, Army Adopted/Other Selected Items and List of Reportable Items. Price includes avionics and $1,500 first destination transportation charges. Excludes armament systems except where annotated. (Refer to chapter 2.)

1/ Includes estimate of average cost of armament, $69,000.
2/ Includes estimate of average cost of armament, $58,242.
3/ Includes $13,000 ground equipment.
4/ Cost (FY 80 dollars) of AH-1S (Modernized) from new production including armament is $2,478,000.
5/ Cost (FY 80 dollars) of AH-1S (Modernized) from AH-1G to AH-1S conversion program including armament is $1,638,000.
6/ Cost (FY 83 dollars) of CH-47D converted from CH-47A/B/C in flyaway mode is $5,447,000.

NOTE: Aircraft type classified contingency or obsolete not included.

SOURCE: DARCOM PM's
TSARCOM RPO's & PM's

4-2. Fixed Wing Unit Price.

AIRCRAFT	NATIONAL STOCK NUMBER	LINE ITEM NUMBER	TYPE	STANDARD PRICE*
U-8D	1510-00-574-7938	A30721	Utility	115,250
U-8F	1510-00-701-2233	A30821	Utility	144,593
U-8G	1510-00-912-4084	A30831	Utility	114,687
C-12A	1510-00-005-5461	A29676	Utility	680,883
C-12C	1510-00-070-3661	A29744	Utility	1,661,500
C-12D	1510-00-087-9129	A29812	Utility	1,750,000
U-10A	1510-00-964-9780	A30971	Utility, STOL	55,824
U-21A	1510-00-933-8223	A30946	Utility	348,844
U-21F	1510-00-169-0295	A30951	Utility	494,800
U-21G	1510-00-140-1627	A30953	Utility	391,218
RU-8D	1510-00-945-9998	A30465	Utility	295,250
RU-21A	1510-00-587-3375	A30694	Reconnaissance Utility	587,004
RU-21B	1510-00-878-4338	A30762	Reconnaissance Utility	1,257,811
RU-21C	1510-00-878-4336	A30843	Reconnaissance Utility	1,259,760
RU-21D	1510-00-804-3641	A30585	Reconnaissance Utility	875,004
RU-21H	1510-00-394-3320	A30591	Reconnaissance Utility	1,501,200
RU-21J	1520-00-124-0914	ZO4615	Reconnaissance Utility	1,817,888
OV-1B	1510-00-715-9379	A30221	Observation/Surveillance	976,437
OV-1C	1510-00-715-9380	A30271	Observation/Surveillance	1,058,540
OV-1D	1510-00-869-3654	A30296	Observation/Surveillance	2,033,066
RV-1D	1510-00-368-8440	A30444	Observation/Surveillance	2,886,664
T-41B	1510-00-929-1012	A30053	Trainer, Flight	16,200
T-42A	1510-00-872-7908	A30596	Trainer, Instrument	102,907
UV-18A	1510-01-011-1462	A30989	Utility	1,800,000

*Published in DA Supply Bulletin 700-20, effective 1 Sep 80, Army Adopted/Other Selected Items and List of Reportable Items. Price includes avionics and $1,500 first destination transportation charges. Excludes armament systems (Refer to chapter 2).

NOTE: Aircraft type classified contingency or obsolete not included.

SOURCE: DARCOM PM's
TSARCOM RPO's & PM's

Section II. FLYING HOUR COSTS

4-3. Aircraft Flying Hour Costs.

To obtain current parts, labor and POL flying hour costs contact DA (DALO-AV), AUTOVON 227-0487 or DACA-CA, AUTOVON 225-1104.

Section III. AVIONICS COSTS

4-4. Avionics Estimated Maintenance Cost Factors.

To obtain current date such as labor costs or parts costs on avionics equipment or systems contact CERCOM (DRSEL-ME-E), AUTOVON 992-1685.

SOURCE: DRSEL-ME-E

Section IV. ARMAMENT COSTS

4-5. Airborne Armament Maintenance Costs.

To obtain current labor and parts costs on aircraft/weapon subsystems contact ARRCOM-DRSAR-MAS-SS, AUTOVON 793-5668.

CHAPTER 5

RESEARCH AND DEVELOPMENT OF MATERIEL

Army aviation research and development is conducted on aircraft systems and in areas not directly related to specific aircraft systems. Research not directly related to aircraft systems includes low speed aerodynamics, structures, and propulsion. Exploratory development is conducted in such areas as area fluid dynamics, aeromechanics, flight dynamics, flight loads, aircraft structures and composite materials, power devices, propulsion components, aircraft survivability, aircraft ground support equipment, reliability/maintainability, avionics technology, and aircraft weapons.

5-1. General.

a. Research aircraft are procured in limited quantities to evaluate concepts during the Research, Exploratory Development and Advanced Development phases of the R&D cycle.

b. Development aircraft systems are aircraft systems proposed for operational use to replace or complement current Army aircraft systems.

5-2. Development Aircraft Systems.

The following development aircraft systems are in order of priority.

5-3. Remotely Piloted Vehicle (RPV) Systems.

a. The remotely piloted vehicle (RPV) system designated YMQM-105 (AQUILA), performs target acquisition, designation, aerial reconnaissance and artillery missions. A small unmanned air vehicle, including its mission payload, is controlled from a ground control station (GCS) and video imagery and target location information are returned via an anti-jam link. See figure 5-1 (AQUILA) for typical devployed system.

The system consists of an air vehicle, ground control station (GCS), remote ground terminal (RGT), launch equipment, recovery equipment and support equipment. The small fixed wing aircraft carries a target acquisition and designation system as a mission payload. The current mission payload consists of a stabilized TV sensor with laser rangefinder/designator. The air vehicle and mission payload are controlled from the GCS through the modular integrated communications and navigation system (MICNS). The MICNS consists of airborne and ground data terminals that provide an anti-jam command and data link. The ground data terminal (GDT) consists of a control unit in the GCS and remote ground terminal (RGT) which tracks, commands and receives data from the air vehicle.

The GCS is the operation center and is housed in a mobile shelter. It includes a mission planning facility, control and display consoles, computer and processing equipment and tactical communications equipment. A truck mounted launch subsystem catapults the air vehicle into the air. When the mission is completed, the air vehicle is automatically guided to a truck mounted vertical net recovery subsystem. The support equipment includes ground power generators, maintenance shelter, ground test equipment, trucks, trailers and other equipment.

b. RPV Milestone Schedule:

1. FSED	contract award	Aug 1979
2. DT II	completed	Nov 1984
3. OT II	completed	Mar 1985
4. Production Contract Award		Jul 1985
5. Initial IOC		Sep 1987

5-4. AHIP Advanced Scout Helicopter (OH-58D).

The AHIP is a single engine rotary wing aircraft designed as a target locator/target designator to operate with other attack helicopters armed with laser guided weapons. AHIP will be armed with MLM or Stinger missiles. (Refer to figure 5-2.)

5-5. Loading and Performance — Typical Mission AHIP.

Not Applicable.

5-6. Performance Notes, AHIP.

Not Applicable.

SOURCE: AVRADCOM-DRCPM-RPV-L

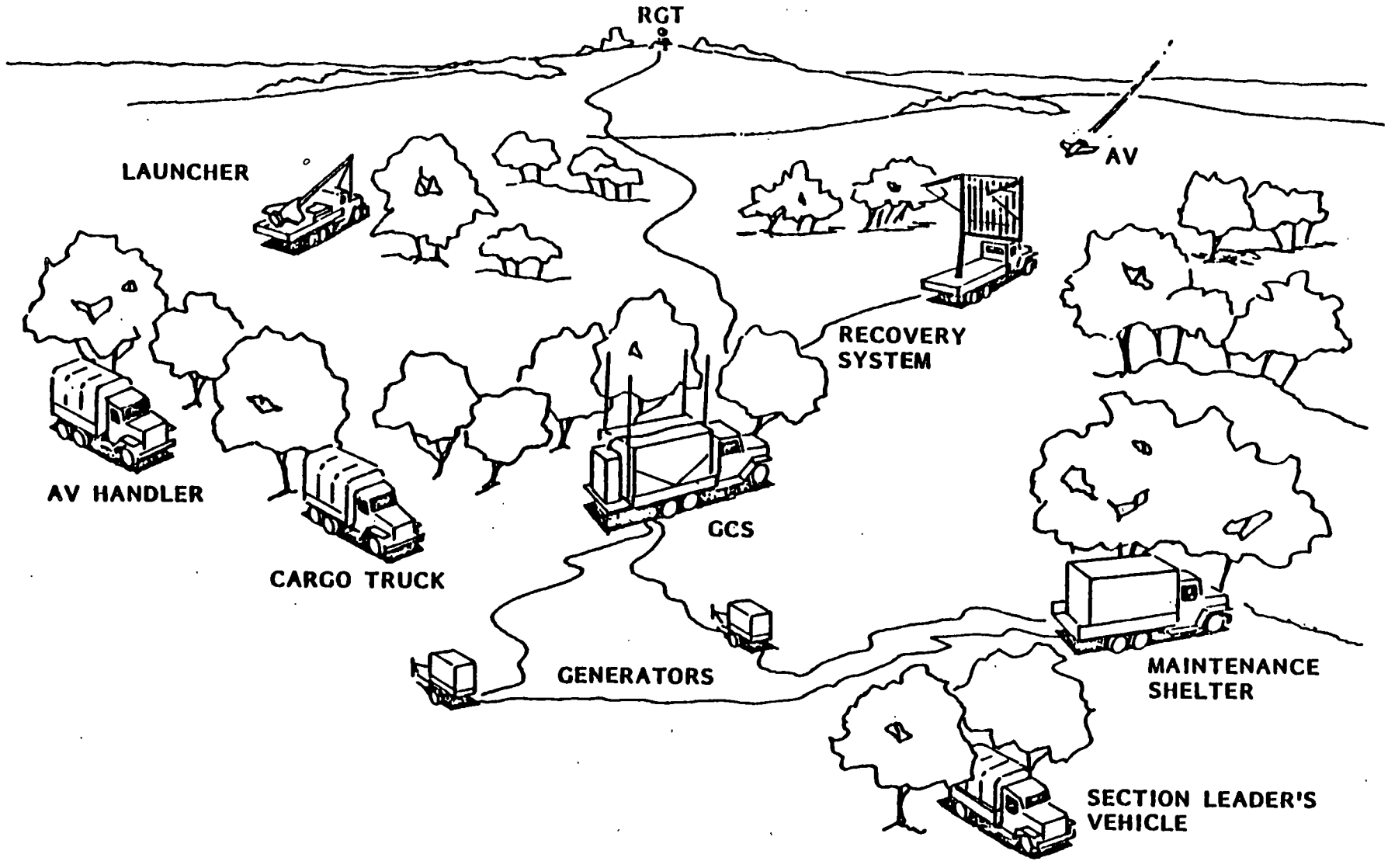


Figure 5-1. YMQM-105 (AQUILA) Typical Deployed System

5-7. AHIP Characteristics.

POWER PLANT

No. & model (1) 250-C30R
Mfr..... Detroit Diesel Allison
Engine Spec. No..... 907
Reduction Gear Ratio 5.095:1
Tail Pipe ..... Fixed Area
Augmentation..... None
Power Turbine to Main Rotor Gear Ratio..... 77.60:1

ENGINE RATINGS

Sea Level Standard Conditions

Not Applicable

TECHNICAL PUBLICATION

AIRFRAME:
Not Available

ENGINE:
Not Available

AVIONICS:
Not Available

ARMAMENT:

Not Available

MISSION AND DESCRIPTION

Advanced Scout Helicopter (AHIP)

The AHIP is being developed primarily for target location and designation for the laser guided weapons carried by accompanying attack helicopters. Designation and hand off may be conducted around the clock and under adverse weather conditions. The advanced scout features a mast mounted sight containing sensors for forward looking infra-red (FLIR), laser designation and television at normal and low light levels. Two multi-function displays with remote frequency capability present navigation, communication and imagery from the sight, easing pilot workload. Additional features include, 3 AXIS SCAS and 2 on board computers enhancing mission capability and reliability.

DEVELOPMENT

Date of Contract..... October 1981

FEATURES

Not Available

PERSONNEL

Pilot..... 1
Co-Pilot/Sight Operator 1

WEIGHTS

LOADING	LB	L.F.
Empty	—	—
Basic	—	—
Design	—	—
Maximum	—	—
Combat	—	—
Primary	—	—
Alternate	—	—
Ferry	—	—

FUEL AND OIL

Fuel:
Grade JP4
Spec..... MIL-T-5624
No. Tanks..... 1
Location..... Fuselage
Qty ..... 104 gal. usable
Oil (Engine)
Spec..... MIL-L-7808/ MIL-L-23699
No. Tanks..... 1
Qty..... 8 Qts.

AVIONICS/ARMAMENT

Refer to Chapter 2

FLYAWAY

NSN 1520-01-125-5476
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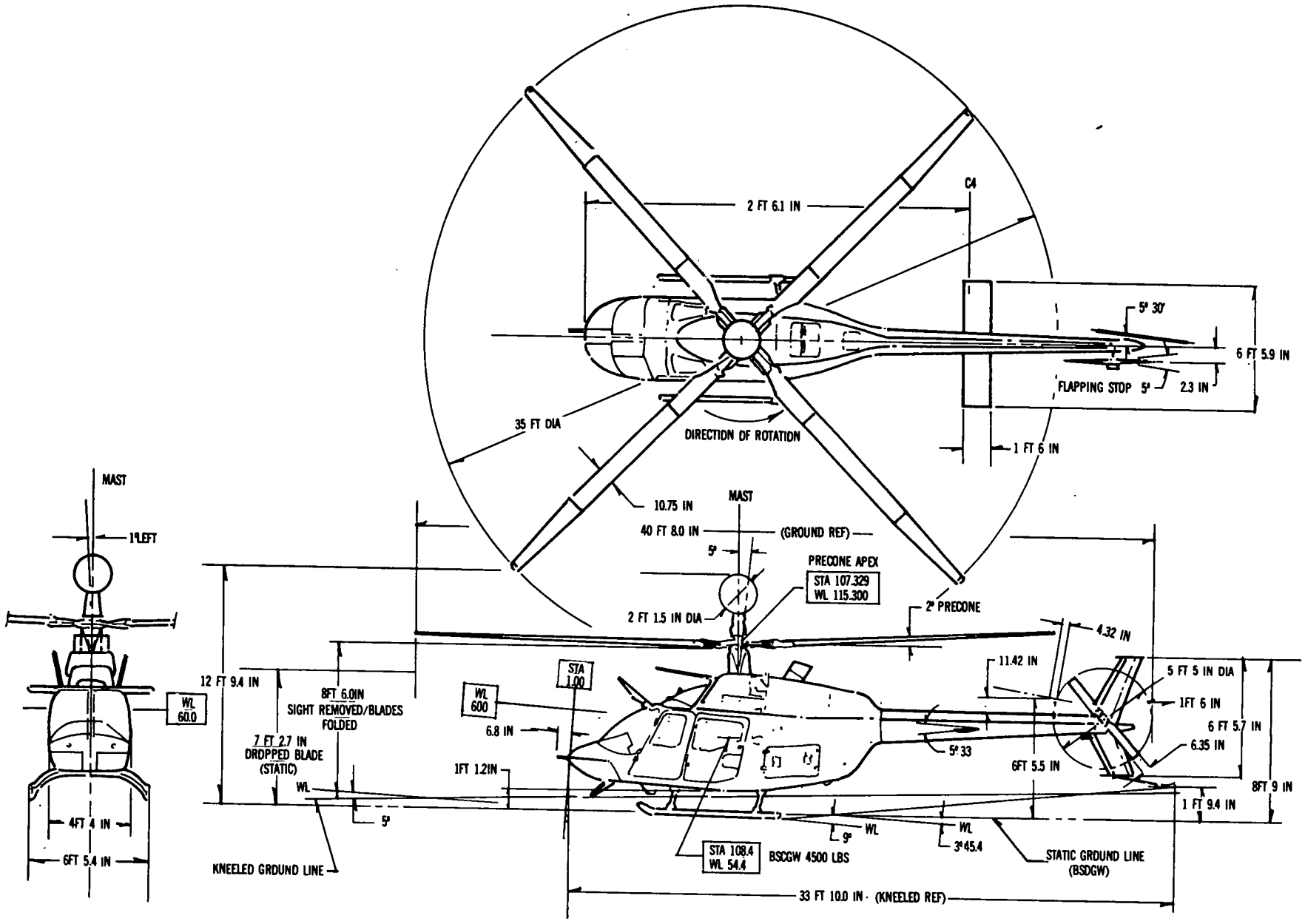

Figure 5-2. General Arrangement (AHIP)

APPENDIX A

REFERENCES

ARMY REGULATIONS (AR) (DA PAMP 310-1)

70-50	Designating and Naming Military Aircraft, Rockets, and Guided Missiles.
95-70	Army Aviation Planning Manual.
310-50	Authorized Abbreviations and Brevity Codes
310-25	Dictionary of United States Army Terms.
570-2	Organization and Equipment Authorization Tables - Personnel.
611-201	Enlisted Career Management Fields and Military Occupational Specialties.
750-1	Army Materiel Maintenance Concepts and Policies.

FIELD MANUALS (FM) (DA PAMP 310-3)

1-105	Army Aviation Techniques and Procedures.
21-6	How to Prepare and Conduct Military Training.
21-30	Military Symbols.
21-60	Visual Signals.
55-15	Transportation Reference Data.
55-40	Army Combat Service Support Air Transport Operations.
90-1	Employment of Army Aviation Units in a High Threat Environment (How to Fight)
90-4	Airmobile Operations (How to Fight)
101-10-1	Staff Officers' Field Manual: Organization, Technical, and Logistical Data (Part I — Unclassified).

TRAINING CIRCULARS (TC) (DA PAMP 310-3)

21-5-7	Training Management in Battalions.

TECHNICAL MANUALS (TM) (DA PAMP 310-4)

55-450-8	Air Transport of Supplies and Equipment: External-Transport Procedures.
55-450 series	Air Transport of Supplies and Equipment: Internal-Transport Procedures.

APPENDIX A (CONT.)

55-450-15 Air Movement of Troops and Equipment (Non-Tactical).

SUPPLY BULLETIN(S)

SB 700-20 Army Adopted/Other Items Selected for Authorization/List of Reportable Items.

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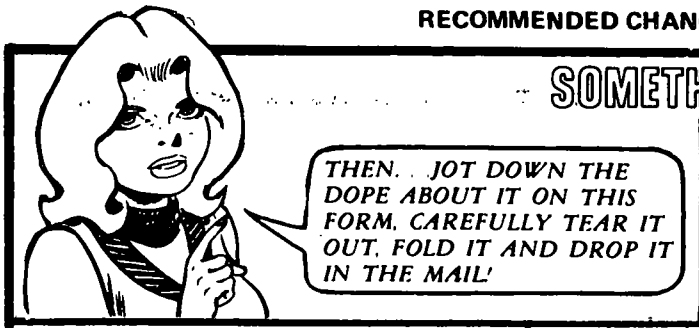

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B1		4-3	
125	line 20		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

In line 6 of paragraph 2-1a the manual states the engine has 6 Cylenders. The engine on my set only has 4 Cylenders. Change the manual to show 4 Cylenders.

Callout 16 on figure 4-3 is pointing at a bolt. In key to figure 4-3, item 16 is called a shim - Please correct one or the other.

I ordered a gasket, item 19 on figure B-16 by NSN 2910-00-762-3001. I got a gasket but it doesn't fit. Supply says I got what I ordered, so the NSN is wrong. Please give me a good NSN

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The Metric System and Equivalents

Linear Measure

1 centimeter = 10 millimeters = .39 inch
1 decimeter = 10 centimeters = 3.94 inches
1 meter = 10 decimeters = 39.37 inches
1 dekameter = 10 meters = 32.8 feet
1 hectometer = 10 dekameters = 328.08 feet
1 kilometer = 10 hectometers = 3,280.8 feet

Weights

1 centigram = 10 milligrams = .15 grain
1 decigram = 10 centigrams = 1.54 grains
1 gram = 10 decigram = .035 ounce
1 dekagram = 10 grams = .35 ounce
1 hectogram = 10 dekagrams = 3.52 ounces
1 kilogram = 10 hectograms = 2.2 pounds
1 quintal = 100 kilograms = 220.46 pounds
1 metric ton = 10 quintals = 1.1 short tons.

Liquid Measure

1 centiliter = 10 milliliters = .34 fl. ounce
1 deciliter = 10 centiliters = 3.38 fl. ounces
1 liter = 10 deciliters = 33.81 fl. ounces
1 dekaliter = 10 liters = 2.64 gallons
1 hectoliter = 10 dekaliters = 26.42 gallons
1 kiloliter = 10 hectoliters = 264.18 gallons

Square Measure

1 sq. centimeter = 100 sq. millimeters = .155 sq. inch
1 sq. decimeter = 100 sq. centimeters = 15.5 sq. inches
1 sq. meter (centare) = 100 sq. decimeters = 10.76 sq. feet
1 sq. dekameter (are) = 100 sq. meters = 1,076.4 sq. feet
1 sq. hectometer (hectare) = 100 sq. dekameters = 2.47 acres
1 sq. kilometer = 100 sq. hectometers = .386 sq. mile

Cubic Measure

1 cu. centimeter = 1000 cu. millimeters = .06 cu. inch
1 cu. decimeter = 1000 cu. centimeters = 61.02 cu. inches
1 cu. meter = 1000 cu. decimeters = 35.31 cu. feet

Approximate Conversion Factors

To change	*To*	*Multiply by*	*To change*	*To*	*Multiply by*
inches	centimeters	2.540	ounce-inches	newton-meters	.007062
feet	meters	.305	centimeters	inches	.394
yards	meters	.914	meters	feet	3.280
miles	kilometers	1.609	meters	yards	1.094
square inches	square centimeters	6.451	kilometers	miles	.621
square feet	square meters	.093	square centimeters	square inches	.155
square yards	square meters	.836	square meters	square feet	10.764
square miles	square kilometers	2.590	square meters	square yards	1.196
acres	square hectometers	.405	square kilometers	square miles	.386
cubic feet	cubic meters	.028	square hectometers	acres	2.471
cubic yards	cubic meters	.765	cubic meters	cubic feet	35.315
fluid ounces	milliliters	29,573	cubic meters	cubic yards	1.308
pints	liters	.473	milliliters	fluid ounces	.034
quarts	liters	.946	liters	pints	2.113
gallons	liters	3.785	liters	quarts	1.057
ounces	grams	28.349	liters	gallons	.264
pounds	kilograms	.454	grams	ounces	.035
short tons	metric tons	.907	kilograms	pounds	2.205
pound-feet	newton-meters	1.356	metric tons	short tons	1.102
pound-inches	newton-meters	.11296			

Temperature (Exact)

°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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